PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

September
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HNTB

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Chapter 1: Goals and Objectives

1.1 GOALS AND OBJECTIVES

A commercial service airport is an essential component of a community because it provides an air transportation link to the world for the passengers and pilots involved in commercial, corporate, general aviation, and air cargo activities. The airport serves as a port for tourism and commerce, accommodates recreation and training, enables and supports business and trade, employs residents, and serves as an economic generator for the region. In order to function and provide benefits for all its tenants and users, an airport must operate safely, efficiently, and in compliance with a myriad of local, state, and federal regulations.

The purpose of the Airport Master Plan, as defined in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, is to develop the Airport sponsor's "strategy for the development of the airport." Development can be defined as expansion, if necessary, and modernization. The Advisory Circular also states that the goal of any Master Plan is to "provide the framework needed to guide future airport development that will cost-effectively satisfy aviation demand, while considering potential environmental and socioeconomic impacts."

While the FAA's guidance provides the general framework for the master plan process, it is essential, at the outset of the master plan, to develop project specific goals and objectives that encompass the context of Palm Springs and the Coachella Valley. The Master Plan goals are intended to be broad and include a series of specific objectives which will provide the framework for how the goals may be realized and how potential development alternatives are evaluated. Together, they comprise the Airport Master Plan Goals and Objectives.

The City of Palm Springs, which owns and operates the Airport, has adopted an "Airport Ordinance" (Ord. 1693 § 2, (part), 2006). The Airport Ordinance outlines the City Council's intended mission for the Airport.

As quoted directly from this document, the purpose of the Airport Ordinance is to…"ensure that the public's health and safety is not jeopardized, that all airport users are treated in a fair, just, and nondiscriminatory manner, and to promote the most effective and efficient use of the airport facilities."

According to the Airport Ordinance, "it is the intent of the City Council to:"

1. *Plan, Manage, Operate, Finance, and Develop the Airport in a manner consistent with the adopted goals and policies of the City Council;*
2. *Provide the residents of the City of Palm Springs and the Coachella Valley with access to the nation's aviation system;*
3. *Preserve and enhance the City's status as a premier tourist destination;*
4. *Ensure the Airport's long term financial health;*

5. *Protect and promote the health, safety, security, and general welfare of the public consistent with all applicable Regulatory Measures;*
6. *Encourage the development and operation of General Aviation businesses and the provision of quality aviation products, services, and facilities to the to the public at the Airport; and*
7. *Ensure that the Airport is operated for the use and benefit of the public and made available to all types, kinds, and classes of Aeronautical Activity on fair and reasonable terms and without unjust discrimination.*

The City's Airport Ordinance shall serve as the foundation for the Airport Master Plan Goals and Objectives and will help ensure that future development of the Airport is consistent with the City's stated mission.

The purpose of the Airport Master Plan Goals and Objectives is to provide measurable criteria by which alternative development scenarios can be evaluated later on in the master plan process. The Master Plan Team has developed eight goals to provide guidelines for delivering the Airport Master Plan:

Palm Springs International Airport
Master Plan Goals

- Maintain and strengthen Airport safety and security
- Enhance the Airport user experience through the efficient handling of passengers, aircraft operations, and commercial activity
- Promote and help grow the tourism industry with facilities that reflect a high quality of customer experience consistent with this world class destination
- Plan a development and improvement program that is fiscally responsible
- Maximize the utilization of Airport facilities and land and promote sustainability in planning and design
- Preserve and promote general aviation
- Promote land use compatibility surrounding the Airport

Palm Springs International Airport
Master Plan Objectives:

Safety and Security Objectives

- Plan facilities that meet or exceed airport design and operational standards set forth by the FAA, and/or TSA
- As necessary, plan to correct existing facilities and conditions that do not meet airport design standards set forth by the FAA and/or TSA
- Consider facility modifications which address airport security requirements and employ emerging technologies

- Minimize the need for runway crossings
- Plan with consideration for the proposed new air traffic control tower
- Plan for and maintain unobstructed access to the airfield for the Aircraft Rescue and Fire Fighting (ARFF) facility and equipment
- Provide ARFF training facilities that enhance on-site training
- Evaluate the appropriate deployment of emerging airport and airfield safety technology

Airport User Experience Objectives

- Plan facilities that meet a high level of service as defined by the International Air Transport Association (IATA) and minimize capacity constraints
- Relieve congestion in the ticketing and bag-claim areas of the terminal
- Improve pedestrian access to ground transportation
- Improve pedestrian access to the Airport
- Accommodate demand for commercial vehicle staging and segregate from other traffic where feasible
- Provide sufficient parking for peak levels of demand that is efficient and user friendly
- Provide access for individuals, who are not able-bodied, utilizing ADA standards

Tourist Industry Objectives

- At a minimum, preserve and where practical, elevate the travel for all passengers with special emphasis on the needs and demands unique to tourism and visitor activity
- Consider improvements to the Customs and Border Protection facility that could accommodate expanded international service if demand develops
- Provide rental car facilities that offer a high user experience for both arriving and departing passengers, minimize interference with surrounding residential areas, and terminal area traffic flow, and provide for more efficient operations

Fiscal Soundness Objectives

- Consider preliminary estimates in development of concepts and alternatives and plan accordingly
- Seek concepts that allow the Airport to generate additional revenue
- Maximize eligibility for FAA funding on proposed improvements
- Consider alternate funding sources for potential improvements

Facility Efficiency Objectives

- Plan airfield facilities that accommodate aircraft that regularly utilize the airport now and in the future

- Plan airfield facilities that are balanced with present and future aviation demand and minimize capacity constraints
- Consider consolidating rental car facilities to reduce terminal congestion, minimize community impact, and improve car rental operational efficiency
- Improve ground transportation access to the Airport
- Evaluate and develop landside parking and roadway systems that minimize congestion and address future growth projections
- Evaluate opportunities to implement common-use and self service check-in and ticketing facilities
- Consider airport/airline maintenance facility needs

General Aviation Objectives

- Plan facilities that specifically accommodate the needs of general aviation users
- Maximize opportunities for general aviation development to accommodate regional demand
- Address the evolving security requirements for general aviation and ensure its compatibility with the other airport security programs

Land Use Compatibility Objectives

- Sustain the Airport's "good neighbor" efforts and maximize environmental compatibility
- Minimize the effects of aircraft operations within the confines of the airport's operational and safety requirements
- Minimize any impact on air quality resulting from aviation in a responsible manner that does not impede the Airport's function
- Develop alternatives that complement the Airport Land Use Compatibility Plan (ALUCP)
- Develop alternatives that complement the Palm Springs International Airport Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Study
- Improve energy efficiency where possible and consider opportunities to maximize benefits of the climate
- Respect the architectural history of the terminal facility and provide opportunities to compliment its prominence

Chapter 2: Inventory of Existing Conditions

2.1 INTRODUCTION

Palm Springs International Airport (PSP or the Airport) is an approximately 930-acre primary commercial service airport serving approximately 1.6 million passengers in 2007[1]. Although situated completely within the City of Palm Springs, California (City), as presented in **Figure 2-1**, the Airport serves as the major commercial and general aviation air transportation center for Southern California's Coachella Valley. Much of the aviation activity in this area, commonly known as Palm Springs but involving numerous cities, is economically driven in large part by the tourism industry.

Palm Springs International Airport is owned by the City of Palm Springs and operated by the City of Palm Springs Department of Aviation. The City procured a consulting firm via a nationwide solicitation process to prepare this Master Plan Update.

Two previous Airport Master Plans have been prepared for the Airport with the most recent update completed in 2003. This Master Plan Update, funded primarily by the Federal Aviation Administration (FAA), updates the 2003 Master Plan. The FAA recommends that airports update Master Plans every five years to reflect changes in the operating environment at the Airport and within the industry as a whole. This Master Plan Update will project a framework for airport development over the ensuing 20-year period that will cost-effectively satisfy aviation demand while considering the environmental and socioeconomic implications and using the objectives set forth in the preceding chapter.

The previous Master Plan was approved by the Palm Springs International Airport Commission on May 7, 2003, approved by the City of Palm Springs Planning Commission on May 28, 2003, and adopted by the City of Palm Springs City Council on July 2nd, 2003[2]. The recommended alternative from the 2003 Master Plan included the following improvements:

- Short-term improvements to security and infrastructure maintenance
- Terminal access and loop road plans modified to allow for a security checkpoint away from the terminal
- Improvements to the terminal building and the construction of new general aviation hangars
- Taxiway improvements designed to enhance safety and improve efficiency
- A Category I precision instrument approach procedure from the south as well as the accommodating approach lighting to Runway 31L
- Replacement of the air traffic control tower (ATCT)
- Plan allowing for flexibility for an aviation-related business park on the northeast side of the Airport as an economic opportunity for the community

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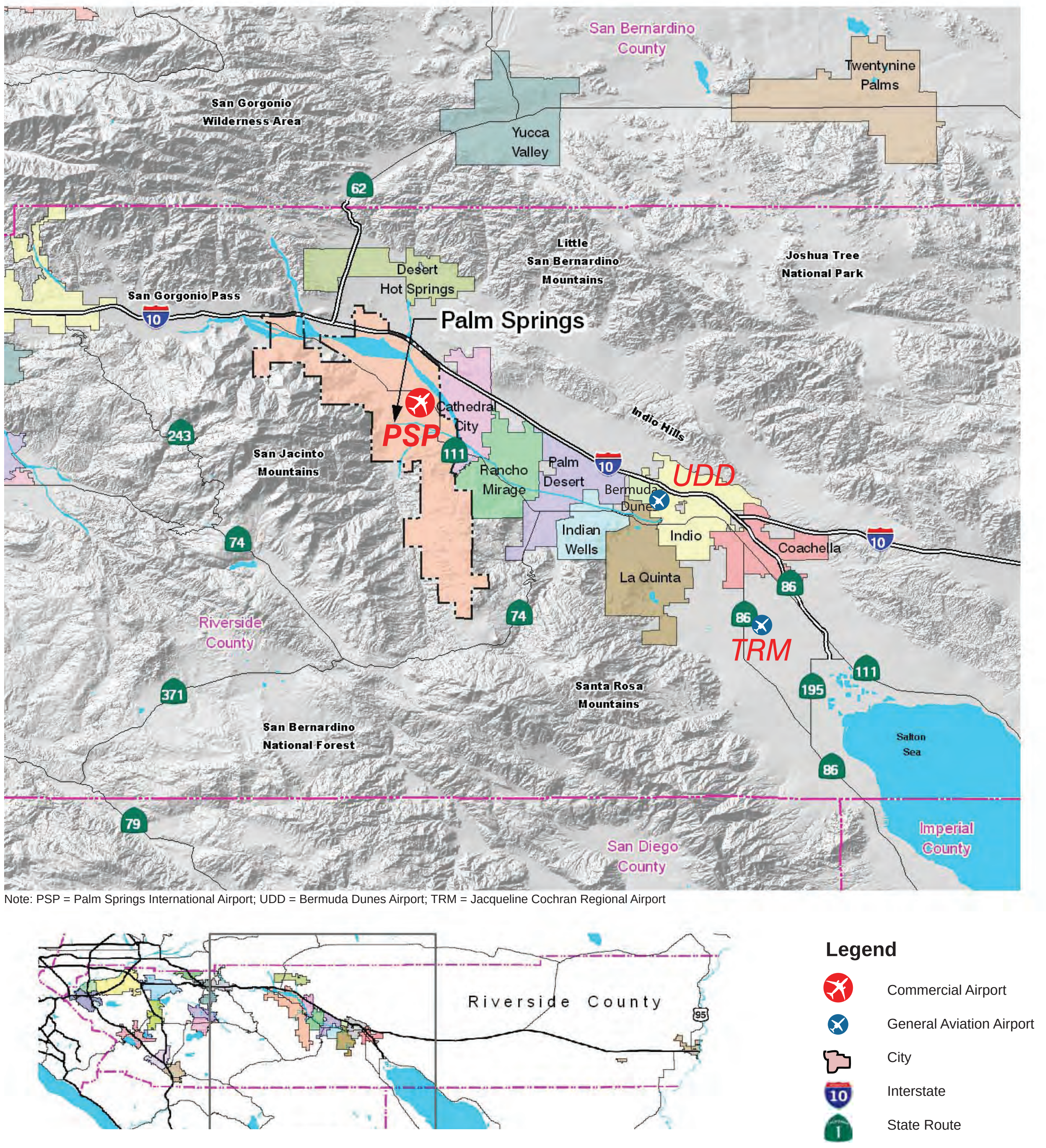
[1] PSP Airport Staff (enplaned, deplaned stats for 2007 by air carrier)

[2] City Council Meeting Minutes for 7/2/03 (note: RC ALUCP #18 says Master Plan was adopted in 2002)

The following improvements have been made:

- Extension of the north end of Runway 13R-31L to 10,000 feet
- Land acquisition (for noise compatibility purposes)
- Development of a new Regional Concourse to accommodate airlines serving Palm Springs with turbo-prop and regional jet aircraft
- Construction of Kirk Douglas Way (formerly Mid Valley Parkway)
- Realignment of Farrell drive
- Construction of a noise berm along the south side of East Vista Chino Road at the north end of the airfield
- Extension of the noise wall located west of Runway 13R-31L
- Reconfiguration of the terminal area circulation roads and the construction of a Vehicle Inspection Plaza

This chapter provides an update of the 2003 Master Plan Update's Inventory through Summer 2009.



Note: PSP = Palm Springs International Airport; UDD = Bermuda Dunes Airport; TRM = Jacqueline Cochran Regional Airport

Source: City of Palm Springs General Plan

PSP and the Coachella Valley

Figure 2-1

PALM SPRINGS INTERNATIONAL AIRPORT

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Palm Springs International Airport
Master Plan

2.2 AIRPORT HISTORY

Prior to the United States' involvement in World War II, the Army Air Corps (predecessor to the Air Force) searched for a suitable location for aircraft landing fields. Instrumental in the site selection were dry weather conditions and calm winds. In 1939, the Army Corps of Engineers (Corps) constructed on the Palm Springs International Airport site the first airport in Riverside County. The land occupied by the Airport was leased to the Federal Government by the Agua Caliente Tribe of the Cahuilla Native Americans. The Corps constructed two parallel runways, a taxiway system and a large paved aircraft parking ramp. The looming threat of war necessitated the construction of additional paved aircraft parking ramps with adjoining taxiways in several parts of town. At the end of the war, the additional parking ramps and taxiways were decommissioned and relinquished to the City. The City of Palm Springs acquired the Airport land from the Agua Caliente Tribe in 1961 for $1,559,170 as a result of Congress passing the Indian Lands Equalization Bill.

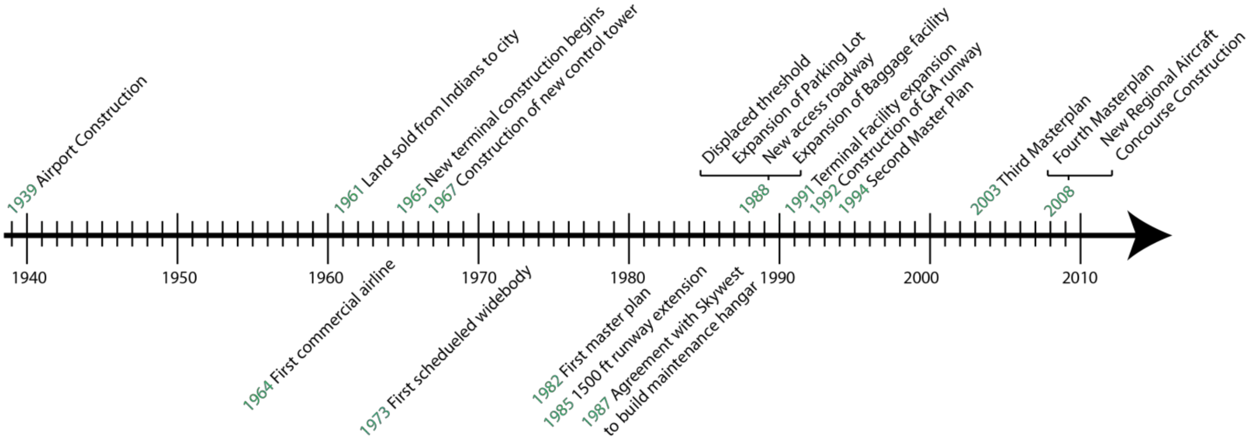
Scheduled air carrier service began at Palm Springs Municipal Airport in 1964 with Bonanza Airlines operating Fairchild F-27A turboprop aircraft. As Palm Springs and the adjacent area continued to evolve into the role of a top resort destination, the Airport quickly outgrew its original facilities. A Capital Improvement Plan proceeded in 1965 with the two-year construction of a new $1.4 million passenger terminal building.

The jet age, combined with increased passenger traffic, brought about many changes at PSP. Beginning in 1967, the Airport received an Aircraft Traffic Control Tower (ATCT) to address increased traffic. The following year, the Airport expanded the passenger terminal complex with an additional ticketing lobby. The increased demand led to an $11 million land acquisition and Capital Improvements Program. Upgrades to PSP included fencing, pavements and approach lighting, new taxiways, runway rehabilitation and an Aircraft Rescue and Fire Fighting (ARFF) station.

Until 1978, the Civil Aeronautics Board regulated air transportation. The Board regulated fares, schedules, awarded routes to airlines, and limited the introduction of new air carriers. In late 1978, however, the United States Congress passed the Airline Deregulation Act of 1978. At the completion of the implementation phase, airlines were free to choose what routes to service, how much to charge for air fares, and what new markets to expand service into. Palm Springs' reputation as a growing vacation destination minimized the negative impacts of deregulation that other small cities experienced.

Within the decade after airline deregulation, service at PSP included service to/from cities outside the United States. To that end, in 1986, the City Council voted to change the name of the Airport to Palm Springs International Airport (PSP). After the events of September 11, 2001 (9/11), PSP experienced a 19 percent drop in passenger enplanements and a 20 percent drop in air carrier operations, reflecting a national decline in air service. By 2004 PSP rebounded and exceeded its pre-9/11 passenger enplanement and operations volumes. Overall aircraft operations did not experience the degree of decline as did the air carrier operations. The historical timeline at PSP is illustrated in **Figure 2-2**.

Figure 2-2: Timeline of Airport


1939 Airport Construction
1961 Land sold from Indians to city
1965 New terminal construction begins
1967 Construction of new control tower
1988
Displaced threshold
Expansion of Parking Lot
New access roadway
Expansion of Baggage facility
1991 Terminal Facility expansion
1992 Construction of GA runway
1994 Second Master Plan
2003 Third Masterplan
2008
Fourth Masterplan
New Regional Aircraft Concourse Construction
1940
1950
1960
1970
1980
1990
2000
2010
1964 First commercial airline
1973 First schedueled widebody
1982 First master plan
1985 1500 ft runway extension
1987 Agreement with Skywest to build maintenance hangar

2.3 AIRPORT BACKGROUND AND ROLE

2.3-1 Airport Background

Palm Springs International Airport (PSP) is a 930-acre commercial service airport owned and operated by the City of Palm Springs. The Airport has two parallel asphalt paved runways with dimensions of 10,001 feet long by 150 feet wide (Runway 13R-31L) and 4,952 feet long by 75 feet wide (Runway 13L-31R). The major facilities at the Airport include a main passenger terminal complex with two passenger concourses and two fixed base operators (FBOs), each providing a wide range of general aviation services. In 2007, the Airport served approximately 1.6 million passengers and facilitated 84,677 aircraft operations. The amount of cargo transported through PSP has dramatically diminished since 1990 from 422 tons to 16 tons in 2007. This is primarily due to stricter security regulations for passenger carriers and the large presence of UPS at LA/Ontario International Airport.

The Airport is geographically located within a flat area of the Coachella Valley at 474 feet above mean sea level (MSL)[3]. The Airport is surrounded within a 10 mile radius by the Santa Rosa, Little San Bernardino and San Jacinto Mountains, with a maximum elevation approaching 11,000 feet.

The Airport is located approximately 2.5 miles from the City of Palm Springs' central business district. Nearby cities within 5 miles of Airport property include the City of Cathedral City (east and southeast of PSP), the City of Rancho Mirage (approximately 3 miles southeast of PSP). Other cities, from north to south surrounding the Airport include Desert Hot Springs, Palm Desert, Bermuda Dunes, Indian Wells, La Quinta, Indio, and Coachella. These Coachella Valley cities are illustrated on **Figure 2-1**.

Several large metropolitan regions are also located within driving distance to Palm Springs, including Los Angeles, California (100 miles to the west), San Diego, California (approximately 140 miles to the southwest), Las Vegas, Nevada (270 miles to the northeast) and Phoenix, Arizona (270 miles to the east). The proximity to these cities makes the Palm Springs region a popular resort destination. Palm Springs also enjoys a growing national and international reputation for luxury resorts and spas, golf, tennis, dining, and architectural design with one of the largest collections of mid-century modern architecture in the world. The airport is currently served with non-stop flights to about 17 cities in the United States and Canada.

Climate

Three mountain ranges (San Jacinto to the south, Little San Bernardino to the north, and Santa Rosa to the west) surround the City of Palm Springs and the Coachella Valley, creating a desert terrain and hot, dry climate. The Coachella Valley is sunny year-round. The average annual rainfall in Palm Springs is 6 inches.

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[3] Mead & Hunt, *Riverside County Airport Land Use Compatibility Plan, Volume 3 – East County Airports Background Data, Chapter E7 – Palm Springs International Airport*, March 2005.

Within the Coachella Valley, the area known as Palm Springs has an annual average temperature of 88.7 degrees Fahrenheit. The average daily temperature during July, the warmest month, can reach 108.3 degrees Fahrenheit. Winter high temperatures typically fall into the mid-70 degree range and the lows into the mid-40 degree range.

2.3-2 National Airport System Role

Palm Springs International Airport is classified as a small hub in the National Plan of Integrated Airport Systems (NPIAS). NPIAS is a national airport classification system plan that identifies 3,431 airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). According to the 2009 NPIAS Report, published by FAA, small hubs are defined as airports that enplane 0.05 percent to 0.25 percent of total U.S. passenger enplanements. There are 72 small hub airports in the United States that together account for 8 percent of all enplanements. Small hubs typically have less than 25 percent of runway capacity used by commercial operations, so the airports can accommodate a large percent of general aviation activity and have an average 134 based general aviation aircraft. Small hubs are typically uncongested with no significant air traffic delays.

2.3-3 Regional Airport System Role

Palm Springs International Airport is currently the primary public-use airport providing air carrier service within Riverside County and the Coachella Valley. The Airport also has a large role in providing general aviation services. There are two other general aviation airports within the Coachella Valley, Jacqueline Cochran Regional Airport in Thermal and Bermuda Dunes Airport in the City of Bermuda Dunes.

Bermuda Dunes Airport (UDD) is a non-towered private-use airport owned by the Bermuda Dunes Airport Corporation. The Airport is located approximately 13 nautical miles southeast of PSP. One runway with dimensions of 5,002 feet long by 70 feet wide (Runway 10-28) caters exclusively to general aviation aircraft. UDD accommodates some of the excess GA demand at PSP. Because of its proximity to Palm Springs International Airport, flights paths at the two airports may at times conflict.

Jacqueline Cochran Regional Airport (TRM), formerly known as Thermal Airport, is a non-towered public airport owned by Riverside County and operated by the Riverside County Economic Development Agency[4] (EDA). The Airport is located in the City of Thermal, south of the City of Coachella and approximately 21 miles southeast of PSP. The Airport has two asphalt paved runways with dimensions of 8,500 feet long by 150 feet wide (Runway 17-35) and 4,995 feet long by 100 feet wide (Runway 12-30). TRM accommodates a variety of corporate and general aviation traffic. Signature Flight Support, Thermal Self-Serve and Tradition Aviation are the three fixed-base operators providing aircraft storage, fuel, charter flights, air ambulance transports, aircraft maintenance, and ground transportation services at Jacqueline Cochran Regional Airport.

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[4] http://www.rivcoeda.org/Default.aspx?tabid=535

The airports in the greater Southern California region that provide scheduled commercial service influence aviation activity at PSP. The region's airports are shown on **Figure 2-3**. The two airports closest in proximity to PSP include San Bernardino International Airport (40 nautical miles northwest of PSP) and LA/Ontario International Airport (56 nautical miles west of PSP), are described.

San Bernardino International Airport (SBD) is a 1300-acre public-use towered commercial and general aviation service airport owned and operated by the San Bernardino International Airport Authority (SBIAA), a joint powers authority comprised of the County of San Bernardino and the Cities of San Bernardino, Colton, Loma Linda and Highland. The San Bernardino International Airport is located 40 nautical miles northwest of PSP, on the site of the former Norton Air Force Base. The Airport has one concrete grooved runway with dimensions of 10,000 feet long by 200 feet wide (Runway 6-24). Despite having the infrastructure to accommodate commercial air carriers, commercial service today is limited. Instead, general aviation makes up the largest share of airport activity. The Airport has two fixed base operators (FBO). SBD FBO Services provides their customers with aircraft hangars and tie-down positions as well as various maintenance, fueling and ground support services. Million Air Interlink, Inc. FBO provides executive terminal services out of a new terminal built in 2008, and various ground support services to their customers. Million Air Interlink, Inc. also manages the Airport's fuel farm. Despite its limited commercial service, efforts are underway to construct a passenger terminal and attract scheduled and charter carriers.

LA/Ontario International Airport (ONT) is a 1,700-acre public-use towered commercial service airport owned and operated by Los Angeles World Airports (LAWA) and located 56 nautical miles west of PSP in San Bernardino County. Two parallel grooved concrete paved runways separated by 700 feet, centerline-to-centerline, have dimensions of 12,198 feet long by 150 feet wide (Runway 8L-26R) and 10,200 feet long by 150 feet wide (Runway 8R-26L). ONT served approximately 6.9 million passengers in 2007. LA/Ontario also provides general aviation services with two FBOs, Mercury and Guardian, and provides extensive air cargo services with heavy freight and express cargo carriers. The express cargo carrier, UPS, maintains its west coast aviation hub at LA/Ontario. In 2007, LA/Ontario transported approximately 533 thousand tons of air cargo. A large majority of the cargo transported to Palm Springs arrives via air cargo carriers flying into LA/Ontario and is then trucked to Palm Springs.

Other commercial service airports within the Southern California area, listed from closest to furthest in proximity to PSP and excluding San Bernardino International Airport and LA/Ontario International Airport, include:

- McClellan – Palomar Airport (CRQ – 57 nautical miles southwest of PSPS)
- John Wayne - Orange County International Airport (SNA – 68 nautical miles west of PSP)
- San Diego International Airport (SAN – 74 nautical miles southwest of PSP)
- Long Beach Airport (LGB – 82 nautical miles west of PSP),
- Los Angeles International Airport (LAX – 95 nautical miles west of PSP), and
- Bob Hope Airport (BUR – 95 nautical miles northwest of PSP)

All the above mentioned commercial service airports, including SBD and ONT and excluding SAN, are located within the Southern California Association of Governments Region, which services approximately 79 million annual passengers (MAP)[5].

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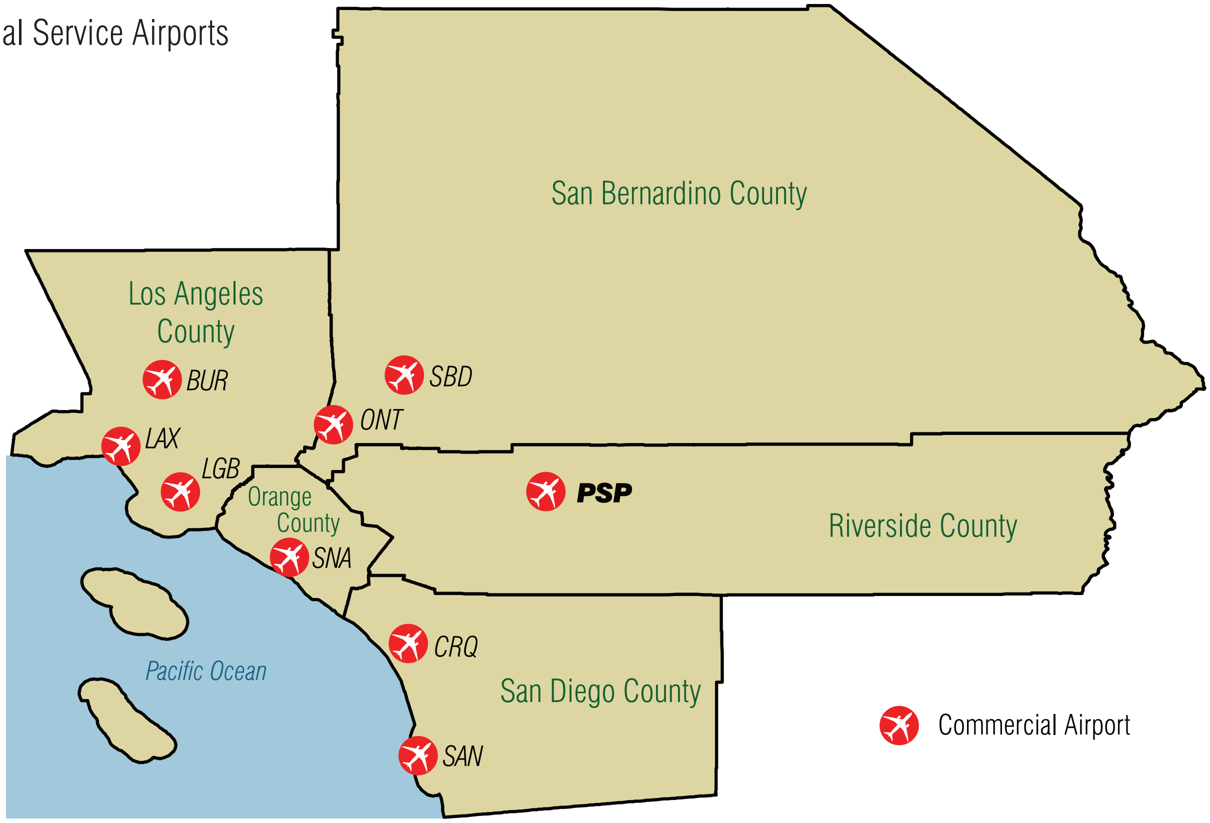
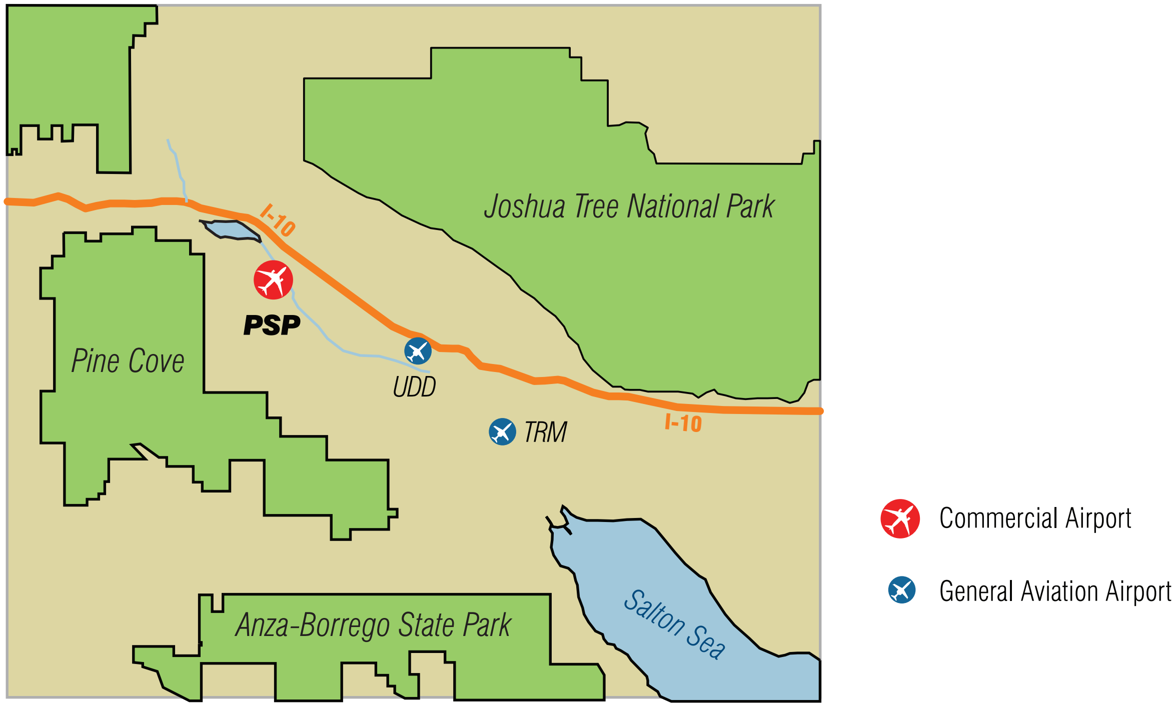
[5] SCAG 2004 RTP – 2003 data

Commercial Service Airports



Note: PSP = Palm Springs International Airport; BUR = Bob Hope Airport; CRQ = McClellan-Palomar Airport; LAX = Los Angeles International Airport; LGB = Long Beach Airport; ONT = LA / Ontario International Airport; SAN = San Diego International Airport; SBD = San Bernardino International Airport; SNA = John Wayne - Orange County International Airport

Coachella Valley Airports



Note: PSP = Palm Springs International Airport; UDD = Bermuda Dunes Airport; TRM = Jacqueline Cochran Regional Airport

Source: HNTB Corporation

PALM SPRINGS INTERNATIONAL AIRPORT

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Regional Airports

Figure 2-3

Palm Springs International Airport
Master Plan

2.4 SURROUNDING AIRPORT LAND USE AND COMPATIBILITY

2.4-1 Land Use

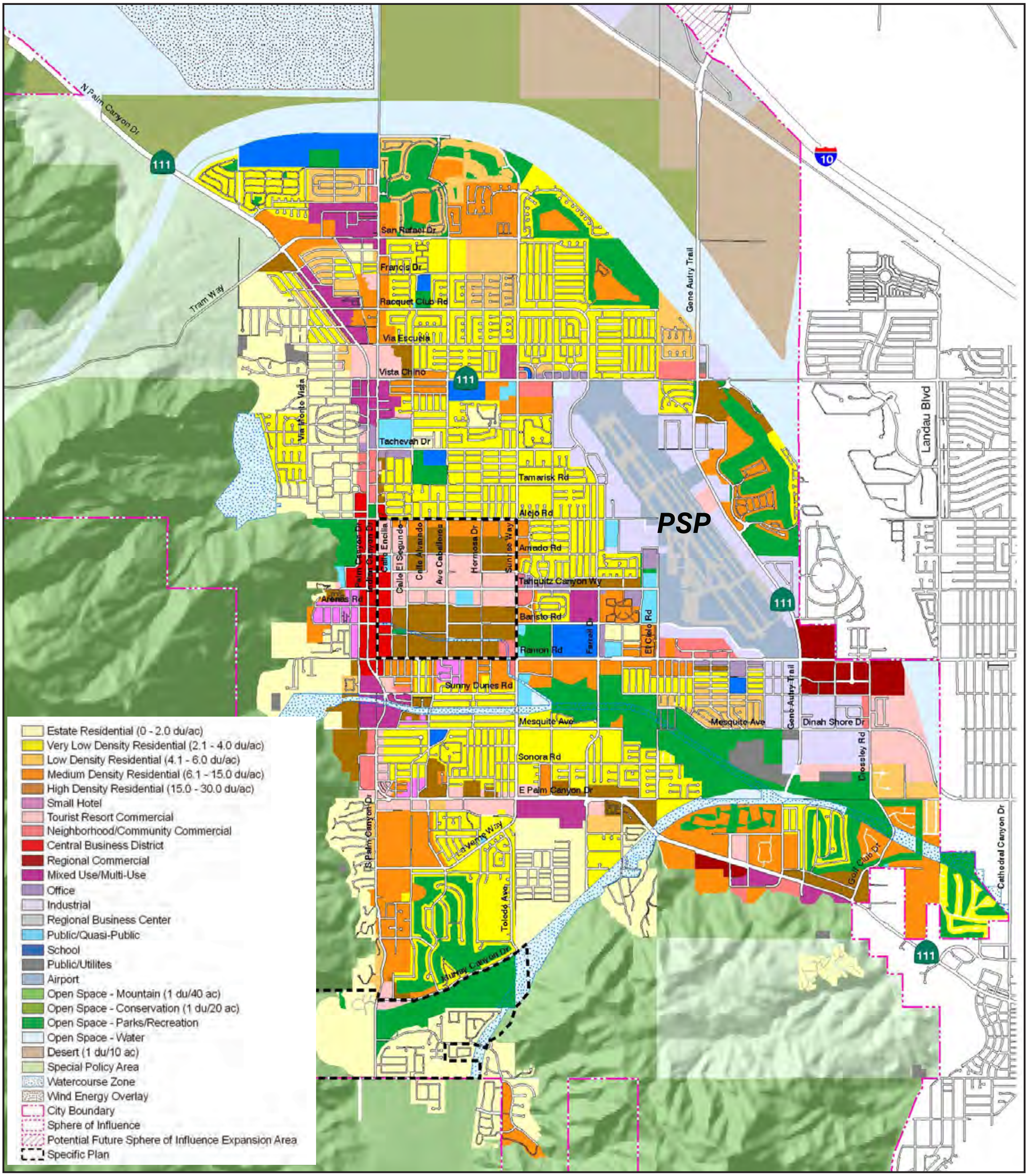
The land within the City of Palm Springs is designated as Airport Influence Area in the October 2004 Riverside County Airport Land Use Compatibility Plan as the "locations of the standard flight paths flown by aircraft approaching and departing the airport." This area covers a radius of approximately three miles from the Airport property line and is primarily zoned residential and industrial, with a small amount zoned for commercial and recreational purposes. The surrounding land uses within the City of Palm Springs are depicted on **Figure 2-4** and described below by land use classification**.**

Residential areas surround the Airport and are adjacent to the Airport property line on the northern and western sides, approximately a half mile from the arrival end of Runway 13R. The majority of this residential land is designated for very low-density housing (2.1 to 4.0 dwelling units per acre). Low (4.1 to 6.0 dwelling units per acre) and medium-density housing (6.1 to 15.0 dwelling units per acre) are located to the east of Gene Autry Trail, off the northeast end of Runway 13R, and west of the City of Palm Springs City Hall along Tahquitz Canyon Way. Higher density housing is located further than one mile from the Airport and located from north to south, along San Rafael Drive, East Vista Chino, Alejo Road, Baristo Road, Ramon Road, and East Palm Canyon Drive.

Low-intensity or light industrial land (for administrative offices, wholesaling, light manufacturing, and industrial uses typically permitted within business parks environments) surround the Airport to the east towards the Whitewater River Storm Channel and extend approximately one quarter mile southeast from the approach end of Runway 31L. A small land area adjacent to and northeast of the Airport is also designated for low-intensity industrial use.

The Central Business District (CBD) and the majority of City lands designated commercial are located approximately 2 miles west of the Airport property line. Lands designated commercial less than approximately 0.5 miles from the Airport property line are located southeast of the Airport property line off the end of Runway 31L and in areas to the north and south.

Other land uses surrounding the Airport include public facilities west of the Airport along El Cielo Road, a public school near the intersection of East Vista Chino and Gene Autry Trail, a golf course (designated open space - parks and recreation) located just east of the Airport and approximately 2 miles near the approach end of Runway 31L. Undeveloped desert land areas lie approximately 2 miles to the northeast and approximately 1.5 miles to the southeast. As illustrated in **Figure 2-4**, the City of Palm Springs boundary ends just east of the Airport property line. Part of this area is within the City of Palm Springs' Sphere of Influence (SOI). This SOI as defined in the October 2007 City of Palm Springs General Plan as "the probable physical boundaries and service area" of a city (established by the Local Agency Formation Commission (LAFCO))". This includes unincorporated Riverside County areas adjacent to city boundaries that will likely be annexed in the future.



Source: City of Palm Springs General Plan

Note: PSP = Palm Springs International Airport

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0 5100'

PALM SPRINGS INTERNATIONAL AIRPORT

City of Palm Springs Land Use Map

Figure 2-4

Palm Springs International Airport
Master Plan

2.4-2 Airport Land Use Compatibility

The City of Palm Spring has developed a policy to encourage land uses around the Airport that are supportive of Airport activities. This includes limiting the height and intensity of non-residential structures adjacent to the Airport, discouraging sensitive uses such as schools, religious institutions, and hospitals, requiring disclosures for areas under aircraft overflights and identifying open lands to be preserved for future airport expansion, noise and safety buffers[6].

In accordance with California Public Utilities Code, Section 21670-21679.5, the Riverside County Airport Land Use Commission (ALUC) has prepared and adopted in October 2004 an *Airport Land Use Compatibility Plan* (ALUCP) which sets the policy and criteria for compatibility between airport uses in Riverside County and the land surrounding the Airport. For PSP, this land comprises 87,600-acres within the City of Palm Springs and the Airport Influence Area (areas affected by airport operations approximately three miles from the Airport property line[7]).

The ALUCP is used by the Riverside County ALUC to review development plans for airports and the surrounding land uses within Riverside County. This includes airport master plans, plans for the construction of new airports and extension, realignment or construction of a new runway, and proposals for non-aviation development. Within each local municipality, general plans are written to be consistent with the ALCUP. The ALUCP is based on previously written state and local laws and the 2003 Master Plan Update for Palm Springs International Airport.

The ALUCP is a guiding document to address safety hazards (e.g. potential for aircraft accidents beyond the runway) controlled mostly by limiting types of development beyond the airport (high-occupancy land uses, hazardous materials storage, etc.…), airspace protection (e.g. restricting heights of proposed structures and other objects or uses that pose hazards to flights (e.g. bird strikes and antennas)), noise impacts, and overflights.

Safety Areas

The Airport Influence Area (AIA) is a designated area surrounding the airport where non-compatible land-uses are minimized, mitigated, or removed in order to maximize safety. The AIA should be characterized by the preservation of open space under aircraft arrival and departure paths, limitations on hazardous material storage sites and critical infrastructure, and limitations on facilities with high concentrations of people (e.g. schools and houses of worship).

Designated by the Riverside County, the AIA is defined in the ALUCP as the area covered by the standard flight paths flown by approaching and departing aircraft or approximately 3 miles from the Airport property boundary[8]. The AIA is further broken out into several compatibility zones, as shown on **Figure 2-5**. Land use restrictions for each zone, except for noise, are described in detail in the Riverside County ALUCP and City of Palm Springs General Plan, and are summarized below.

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[6] City of Palm Springs General Plan, 2007

[7] City of Palm Springs General Plan, 2007; California Public Utilities Code Section 21675.1 (b) / CA public utilities code Section 21675.1 (b) designates the AIA as 2 miles / Riverside County designates as 3 miles of major general aviation, airline and military airports

Zone A is the "Airport Zone" or the area made up of the runway protection zone (RPZ) and building restriction line. Zone A is limited to light industrial / warehousing land uses at the northern edge of the Airport and other public / institutional land uses at the southern edge of the Airport. Planned residential uses are not permitted within Zone A.

Zone B1 and B2 make up the inner approach / departure zone and land adjacent to the runway, respectively. It includes the area approximately a half mile from the boundary delineating Zone A. Residential land uses currently in Zone B are not in conflict with the ALUCP. Light industrial / warehousing uses are limited to approximately 25 people per acre at the northwestern edge of the Airport. Within Zone B1, intensities of up to approximately 50 people per acre are permitted depending on the amount of open land on the site.

Zone C is the extended approach / departure zone and includes the area approximately two miles from the boundary delineating Zone A. Planned residential developments in Zone C are generally limited to low and medium density housing (up to 15 dwelling units per acre). Light industrial / warehousing land uses are limited to approximately 75 people per acre, and up to 100 people per acre depending on the amount of open land on the site.

Zone D is the primary traffic pattern zone and includes the area approximately three miles outward from the boundary delineating Zone A. Planned residential developments in Zone C are generally limited to low density housing (2 to 5 dwelling units per acre). Planned commercial / office developments are generally limited to low intensity use (100 people per acre).

Zone E is the airport environs zone and includes the area located outside of Zone D. There are currently no incompatible uses within Zone E.

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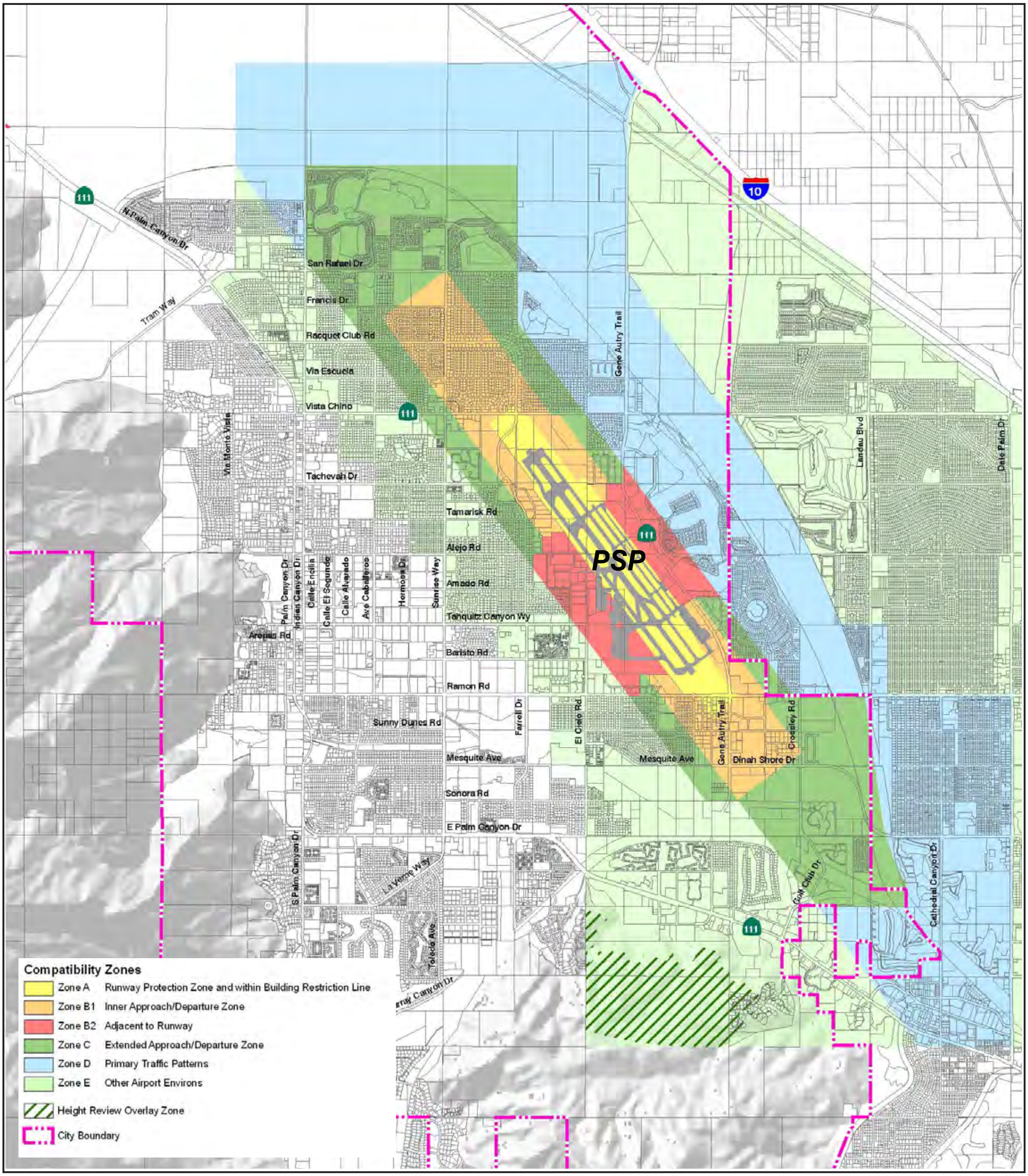
[8] RC_ALUCP_3 / CA public utilities code Section 21675.1 (b) designates the AIA as 2 miles / Riverside County designates as 3 miles of major general aviation, airline and military airports



Source: City of Palm Springs General Plan

Note: PSP = Palm Springs International Airport

PALM SPRINGS INTERNATIONAL AIRPORT

Airport Land Use Compatibility Zones

Figure 2-5

Palm Springs International Airport
Master Plan

2.4-3 Airspace Protection

Airspace protection includes the protection against hazards created by objects penetrating navigable airspace, wildlife (bird strikes), and other visual or electronic objects (e.g. lights, antennas) which may interfere with air navigation.

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, establishes standards for determining obstructions in navigable airspace and establishes rules for notification to FAA of construction activity near the airport. FAR Part 77 does not provide the Airport or FAA with the ability to prohibit or limit construction. It does, however, establish guidelines for changing approach and departure procedures to avoid a structure determined to be a hazard to air navigation. Regulations on building and construction are controlled by the jurisdiction in which the proposed structure is located by established or proposed zoning laws and the building permitting process of a given municipality. It is incumbent to the municipal leaders to adhere to recommendations regarding structures set forth in FAR Part 77.

2.4-4 Noise

PSP has a Federal Aviation Regulation (FAR) Part 150 Airport Noise Compatibility Plan (Part 150 NCP) which was approved by the Federal Aviation Administration (FAA) in June 1994. The regulations contained in Part 150 NCP are voluntary. For Palm Springs International Airport, the June 1994 Part 150 NCP was developed for the proposed extension of Runway 13R-31L from a length of 8.500 feet to 10,000 feet and various other airport improvement projects recommended in the 1994 Master Plan.

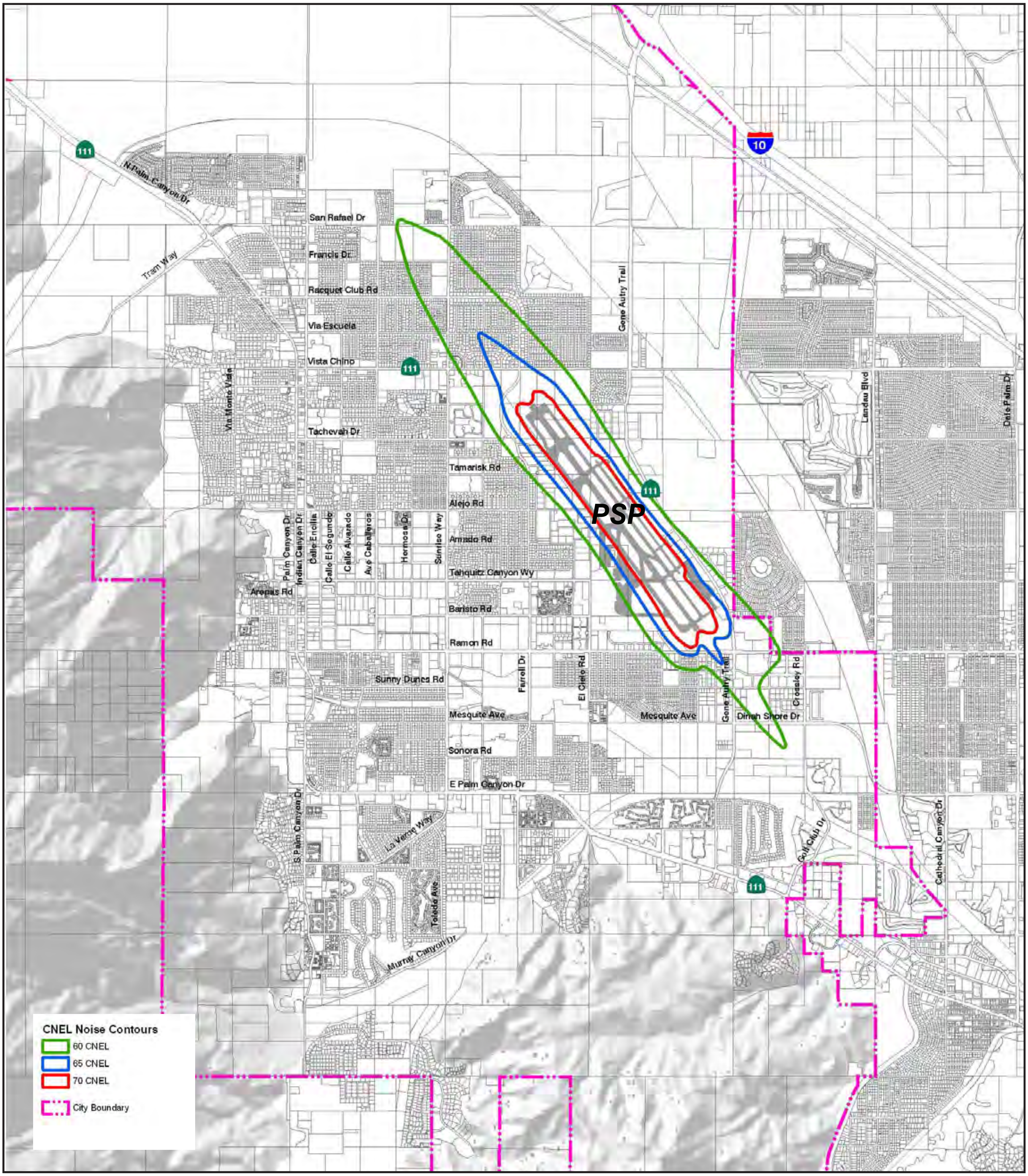
The Part 150 Study includes the development of existing and future noise exposure maps and a noise compatibility program which identifies noise mitigation strategies and guidelines to control and mitigate incompatible land uses. Sources of aircraft noise, or unwanted sound, include sound produced during take-offs, engine run-ups, landings, and overflights. At PSP the noise impact to the community was depicted graphically as noise contours similarly displayed on topographical maps, is determined in an integrated noise model based on the ambient noise generated from the total number of and types of aircraft operations.

Sound exposure is typically expressed in units of decibels (dB). However, because people perceive the “loudness” of sound levels or energy differently, based on their proximity to sound, duration they are exposed, and their overall sensitivity to sound, noise generated by aircraft for California airport planning purposes are generally measured at the Community Noise Equivalent Level (CNEL). CNELs are the weighted averages of the sound levels throughout a 24-hour time period for an urban environment. Sound levels at night are penalized and given a higher rating. A 70 CNEL indicates a very noisy urban area.

The existing 2002 noise exposure map from the 2003 Master Plan showing the noise levels at the 60, 65, and 70 Community Noise Equivalent Level (CNEL) are shown as contours on **Figure 2-6**. In the City of Palm Springs, residential land uses are generally unacceptable at 70 CNEL or above. For the area immediately surrounding PSP, the threshold for new residential developments is 62 CNEL. As stated in the ALUCP, residential structures are also recommended to be noise attenuated to no more than 45 CNEL.

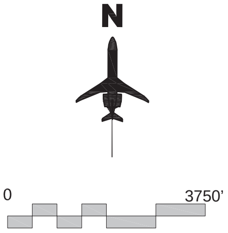
From the Part 150 Study, Airport staff has identified a variety of measures to reduce noise exposure to the surrounding area. These measures included recommending takeoff and landing procedures as needed, designing the airport in consideration of noise impacts, providing sound insulation for residential homes within the 65 CNEL, purchasing land to prevent future development on land within the 65 CNEL, educating the community about aircraft noise, and adding noise barriers. Since the Part 150 Study was completed, several noise reducing projects were completed. These include:

- Adding a berm adjacent to East Vista Chino (1997)
- Extending the existing noise wall on the west side of Runway 13R-31L, which was originally built in the 1980s
- Skywest Airlines built a 9,600 square feet “hush house” for engine testing at their maintenance facility located between Runway 13L-31R and Gene Autry Trail.
- Runway displaced landing thresholds.



Source: City of Palm Springs General Plan

Note: PSP = Palm Springs International Airport



2002 Noise Exposure Map

Figure 2-6

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT

2.4-5 Overflight Zone

The overflight zone refers to the area beyond the noise contours where aircraft fly based on air traffic patterns for standard arrival and departure routes. The ALUCP recommends all prospective land buyers within the Airport Influence Area be notified of the overflight zone, their proximity to the Airport and whether or not their property is covered under the 16 acres of avigation easements surrounding the Airport.

2.5 ENVIRONMENTAL SETTING

The Federal Aviation Administration's (FAA) Office of Airports (ARP) is the FAA organization responsible for major Federal actions at public-use airports. This includes, per the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), considering environmental effects of proposed actions and their reasonable alternatives. Environmental documentation typically occurs for projects that may cause "significant environmental effects[9]" following the completion of an airport master plan when airports start to implement proposed actions.

Prior to pursuing the NEPA / CEQA process, the FAA Advisory Circular (AC) 150 / 5070-6B on Airport Master Plans nor FAA's environmental procedures require an environmental review in a master plan. However, to provide initial data and analysis to help expedite environmental processing, an inventory of environmental conditions and preliminary analysis of environmental impacts is provided in this Airport Master Plan Update.

An inventory of the natural environment at the Airport and within the surrounding community is included within this Section. Sources for the environmental inventory include the 1995 Environmental Impact Report / Environmental Assessment for Implementation of Airport Master Plan and FAR Part 150 Study and the City of Palm Springs General Plan.

The impact categories addressed in an environmental inventory include:

- Air Quality
- Coastal Barriers (not applicable)
- Coastal Zone (not applicable)
- Compatible Land Use
- Construction Impacts (to be addressed in alternatives evaluation)
- Section 4(f) (not applicable)
- Farmlands (not applicable)
- Fish, Wildlife and Plants
- Floodplains
- Hazardous Materials
- Historical, architectural, and cultural

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[9] Federal Aviation Administration (FAA) Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions

- Light emissions and visual effects
- Natural resources and energy supply
- Noise Socioeconomic, Environmental Justice, and Children's Health and Safety Risks
- Solid Waste
- Water Quality
- Wetlands (not applicable)
- Wild and scenic rivers (not applicable)

In the alternatives evaluation phase of the master planning process, the alternatives will be preliminary evaluated by the CEQA and NEPA environmental impact categories. This early level of environmental consideration will help expedite subsequent environmental alternatives from the NEPA / CEQA process if those alternatives do not effectively meet the Master Plan goals and objectives or provide relative utility.

Air Quality

Federal and State ambient air quality standards are established under the Clean Air Act by the Environmental Protection Agency (EPA). National ambient air quality standards (NAAQS), defined by the EPA, consists of six "criteria" pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide, (SO_2). Per the Clean Air Act, states are required to develop a State Implementation Plan (SIP) to achieve national ambient air quality standards. In the state of California, the SIP is developed by the California Air Resources Board (CARB). In Southern California, the South Coast Air Quality Management District (SQAQMD) is the agency responsible for regulating air pollutant emissions to meet federal and state established air quality attainment levels. Some of their responsibilities include preparing an Air Quality Management Plan (AQMP) and monitoring ambient air quality of various air pollutants.

Ambient air quality is measured and collected at monitoring stations geographically located within the various air basins throughout Southern California. The City of Palm Springs is generally impacted by air contaminants within the geographical boundaries of the South Coast Air Basin (SoCAB), which comprises all of Orange County and the non-desert portions of the counties of San Bernardino, Riverside, and Los Angeles, and the Riverside County portion of the Salton Sea Air Basin (SSAB).

The City of Palm Springs is in the nonattainment area for ozone and particulate matter where ozone and particulate matter levels exceed federal and/or state established ambient air quality standards. Ozone is primarily produced from vehicular activity. For the Airport, the level of ozone emitted may be reduced by encouraging the use of mass transit, walking, shuttle services, and other alternative-fuel vehicles. It may also be reduced by encouraging the use of the existing cell phone lot for private occupancy vehicles (POVs) at the Airport.

The City of Palm Springs is also in nonattainment status for particulate matter due to its siting in the Coachella Valley Association of Governments (CVAG) "Blowsand Hazard Zone". Blowsand is a form of wind erosion that occurs when barren sand or sandy loam soils are exposed to high winds in the absence of moisture. Blowsand reduction measures are typically required on-site during construction activities.

This may be achieved through planting vegetative hedges, walls or constructing other barriers to block the effects of wind.

Fish, Wildlife and Plants

Palm Springs International Airport is surrounded by many wilderness areas and state parks, the most well known being the Joshua Tree National Monument, located approximately 9 nautical miles northeast of the Airport. Within the airport property boundary, there are no naturally occurring springs, permanent aquatic habitats or drainages.

Wildlife or fauna on Airport property include reptiles, birds, and mammals commonly found in the surrounding vicinity and typical of the Colorado Desert subdivision of the Sonoran Desert. Reptiles include the side-blotched lizard, western whiptail, desert iguana, coachwhip, and the western shovel-nosed snake. Birds include the mourning dove, house finch, common raven, Costa's hummingbird, and red-tailed hawk. Mammals include the desert cottontail, black-tailed jackrabbit, Palm Springs ground squirrel, and desert kangaroo rat. The animals present on the California Department of Fish & Game (CDFG) "Special Animal" list of 1992 include the Coachella Valley Fringe-toed Lizard (northern portion of the Airport near Vista Chino Road), burrowing owl, loggerhead shrike, and Palm Springs ground squirrel. The fringe-toed lizard is also deemed as a threatened species by the federal government.

Within the Airport property, the most pervasive native plant "community" is the Sonoran creosote bush scrub community, a perennial plant. Other vegetation includes the burrobush, Emory's dalea, sandpaper plant, and encelia. In the areas closest to the runways and taxiways, gravel has been laid on top of an area previously dominated by weed species. The only two plant species within Airport property deemed to be rare or endangered include the milk vetch and flat-seeded spurge. The milk-vetch plant is located on both sides of Taxiway C-1 closer to the terminal building. The flat-seeded spurge plant is located at the northern edge of the property 40 meters south of Vista Chino Road.

Floodplains / Flood Control

The Airport is located approximately one mile west of the Whitewater River, the primary drainage channel which flows through the Coachella Valley watershed to the Salton Sea. A 100-year floodplain extends onto airport property along Gene Autry Trail. The Atlantic Aviation FBO is located within the floodplain.

Hazardous Material Sites

Known hazardous material contamination sites existing or that existed in the past on and adjacent to Airport property includes a portion of the Signature Flight Support general aviation area. The soil in this area, formerly occupied by AMR Combs, is known to be contaminated. In the past, fuel tankers were reported to have dumped leftover fuel onto the ground after filling storage tanks. Impacted areas include the northern tank cluster of the fuel farm at approximately 25 feet below grade. Another area on the southeastern portion of the former AMR Combs contains contaminated soils to a depth of approximately 130 feet below grade. As of 1992, the contamination did not pose a risk to groundwater or surface facilities.

Another area where the soil is contaminated is within the vicinity of the Airport fire training pits. In the early 80's and possibly earlier, Jet-A fuel was used in the burn pits for fire training exercises. Although the soil is contaminated to at least 20 feet below grade, concentrations only exceed state action levels in the upper five feet of the boring samples collected during a study conducted in 1987 by Pioneer Consultants.

The Palm Springs – Ramon landfill is located on the northeast corner of Ramon Road and Gene Autry Trail. As of 1991, there were no hazardous concentrations of contaminants that would adversely affect groundwater and the quality of the soil.

Natural Resources

Natural features surrounding the Airport include the Little San Bernardino and San Andreas Fault System to the north and northeast, the Santa Rosa Mountains and San Jacinto Mountains to the south, and the Salton Sea to the southeast. The major river flowing through Palm Springs is the Whitewater River, which flows southeast towards the Salton Sea. The Airport site is comprised of eloian, alluvial (fine to coarse sands, gravels and silty sands with silt horizons), and fluvial sediments, overlaid by dune sands.

Water Quality: GroundWater and Stormwater

Water service in the Coachella Valley is provided by the Coachella Valley Water District, Mission Springs Water District, and in the City of Palm Springs, the Desert Water Agency (DW). Groundwater is obtained for the Coachella Valley from three groundwater subbasins: Whitewater River, Mission Creek, and Indio. Groundwater lies in excess of 210 feet below grade.

Due to the desert environment in Palm Springs, managing water demand is important. Groundwater demand today exceeds the amount of water that is recharged from surface run-off from the surrounding mountains and inflow from the Whitewater River. However, through a contract with the Metropolitan Water District of Southern California (MWD), additional water is obtained from the Colorado River. Water demand strategies to consider may include recycling wastewater.

Stormwater runoff generally flows to the southeast, toward the intersection of Gene Autry Trail and Ramon Road before flowing east to the Whitewater River via a storm drain. Although storms are infrequent in Palm Springs, when the top layer of the soils in the vicinity of the Airport are disturbed, surface water drainage is likely to cause erosion to unprotected areas, impacting surface water quality. Future construction activity at the Airport should include mitigation strategies to minimize erosion and impacts to the surface water quality. The Airport has a General Stormwater Pollution Prevention Plan and Permit in accordance with the National Pollution Discharge Elimination System (NPDES) program under Section 402(p) of the Clean Water Act. To prevent and contain leakage from fuel storage tanks, fuel storage tanks are also equipped with secondary containment and overfill protection devices. The Airport also has a retention basin to collect runoff from the airfield located just south of Runway 31L near the intersection of San Ramon and Gene Autry Trail.

2.6 OWNERSHIP / MANAGEMENT

Palm Springs International Airport is owned and operated by the City of Palm Springs. The City is responsible for the operation and maintenance of all Airport facilities except navigational aids owned and operated by the FAA. A City Council is advised on airport-related issues by a nineteen member Airport Commission. Airport Commissioners, composed of residents from across the Coachella Valley, advise the City Council on land acquisition and development, project financing, facility leases, and Airport budget. Commissioners meet on the second Wednesday of every month at 8:00 a.m. in the Airport Conference Room located on the second floor of the terminal building.

As stated in City Ordinance 1693, "The Director of Aviation is responsible for the operation, management, maintenance and security of the Airport and all Airport owned and operated land, improvements, facilities, vehicles and equipment." The Director of Aviation reports directly to the Palm Springs City Manager.

2.7 RECENT AIR SERVICE DEVELOPMENTS

Depending on the time of year, the Airport has as many as 100 departures and arrivals daily from about 6:00 AM to 11:00 PM on 10 airlines to 17 cities in the United States and Canada. Airlines operating out of PSP include:

- Alaska Airlines
- Allegiant Air
- American Airlines
- Delta Airlines (Northwest Airlines acquisition)
- Delta Connection
- Horizon Air
- Sun Country (seasonal)
- United Airlines (seasonal)
- United Express
- US Airways Express
- WestJet (seasonal)

Direct non-stop service is provided to the following cities:

- Bellingham, Washington (BLI)
- Calgary, Alberta, Canada (YYC)
- Dallas / Fort Worth, Texas (DFW)
- Denver, Colorado (DEN)
- Edmonton, Alberta, Canada (YEG)
- Las Vegas, Nevada (LAS)
- Los Angeles, California (LAX)
- Minneapolis / St. Paul, Minnesota (MSP)
- Chicago, Illinois (ORD)

- Phoenix, Arizona (PHX)
- Portland, Oregon (PDX)
- Sacramento, California (SMF)
- Salt Lake City, Utah (SLC)
- San Francisco, California (SFO)
- Seattle, Washington (SEA)
- Vancouver, British Columbia, Canada (YVR)

2.8 PASSENGER MARKET SURVEY

The passenger profile is an important consideration in planning for the future of Palm Springs International Airport, specifically in determining facility requirements. To determine the passenger profile, in 2007 and 2008, the Palm Springs Resort Communities Convention & Visitors Authority conducted a "Visitor Profile Study". The goal of the study was to determine and provide the City of Palm Springs with passenger trip information, retail spending preferences, and demographic profiles of passengers. Questions answered in the survey included:

- Who visits the area?
- Why do visitors choose to come to the Palm Springs area?
- What activities do visitors engage in?
- How long and how frequent do visitors stay?
- What sources do visitors use to plan their trip?
- What are the visitors' general impressions of the area?
- How likely are visitors of their return to the area and would they recommend a stay in the region to others?

The study population eligibility criteria consisted of visitors who were English-speaking, over 18 years of age, stayed anywhere from four hours to 30 days, and who did not live or work in the Coachella Valley. Of the 8,410 people who were approached with the survey, 1,730 met eligibility requirements, resulting in a completion rate of 21%. Visitors were approached at the Palm Springs International Airport as well as other area attractions.

Respondents came from all fifty states and ten foreign countries (though the majority of foreign visitors came from Canada). In general, the farther the visitor traveled, the longer their stay. However, their visits were not as frequent as those who traveled a shorter distance. Respondents from Canada were more likely to visit primarily for vacation or recreation.

Visitors to the Coachella Valley were found to be older (mean age of 53 years), have incomes greater than $100,000 (60%), married (70%), and were repeat visitors (63%). Most of these repeat visitors traveled during the winter months. In general, the winter months attracted the highest percent of retired visitors with the highest incomes whereas summer attracted single visitors with the lowest household income of the study. Most visitors had their expectations about Palm Springs area met or exceeded (96%).

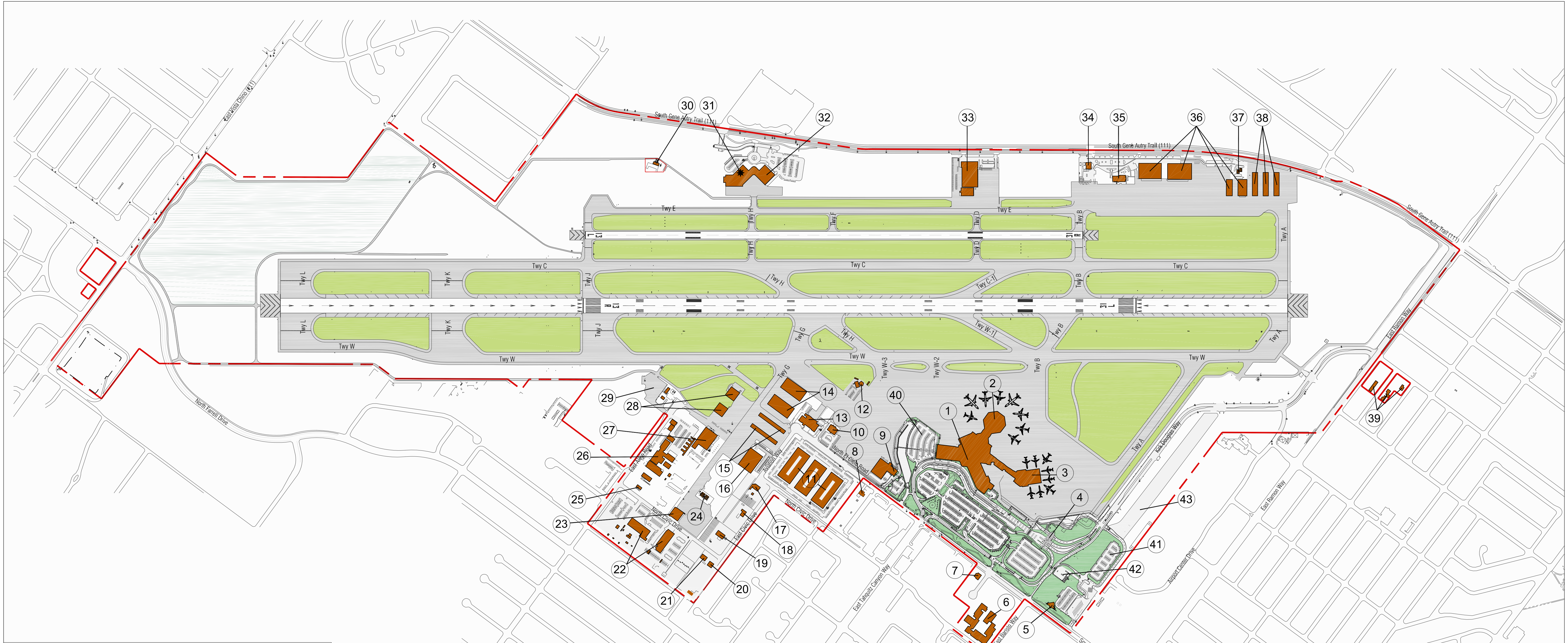
2.9 AIRFIELD

Airside facilities at Palm Springs International Airport include runways, taxiways, ramp area, navigation aids, and lighting. The Airport's airside facilities are depicted on **Figure 2-7**. The designated land uses on-Airport are presented on **Figure 2-8**. The breakdown of functional land use in total acres at PSP is presented in **Table 2-1**.

Table 2-1: PSP Functional Land Use Breakdown

Functional Land Use	Total Acres
Terminal	6
Rental Car	10
Maintenance / Support	12
Commercial / Industrial Development	22
City Government / Public Use	26
General Aviation	57
Ground Transportation / Parking	63
Safety, Noise or Environmental Mitigation	80
Unleased or Vacant	194
Airfield	460
Total	**930**

Source: HNTB Analysis



Airport Facilities / Infrastructure Legend

1: Terminal Processor
2: Bono Concourse
3: Regional Concourse
4: Vehicle Inspection Plaza
5: Ground Transportation Center (GTC)
6: Palm Springs Senior Affordable Housing
7: City Boxing Club
8: City Co-Generation Facility (off-airport)
9: U.S. Customs and Border Protection Facility
10: Signature Flight Support
11: Medical Offices (Abbey Group)
12: Air Traffic Control Tower
13: Firestation #2 / Aircraft Rescue and Fire Fighting
14: Signature Flight Support Condominium Hangars
15: Signature Flight Support T- Hangars
16: Desert Springs Aviation
17: Hertz Vehicle Service / Maintenance / Storage
18: National / Alamo Service / Maintenance / Storage
19: Avis Service / Maintenance / Storage
20: Budget Service / Maintenance / Storage
21: Dollar Service / Maintenance / Storage
22: City Corporate Yard
23: Desert Aero Maintenance Center
24: Signature Flight Support Fuel Farm
25: Airport Quonset Hut
26: Palm Springs Unified School District
27: SSC Racing
28: Signature Flight Support Hangars
29: Fire Department Training Area
30: ASR-9 Radar
31: Airport Beacon
32: Palm Springs Air Museum
33: Sky West Maintenance Hangar
34: Atlantic Aviation Restaurant
35: Atlantic Aviation
36: Altantic Aviation Hangars
37: Atlantic Aviation Fuel Farm
38: Atlantic Aviation T-Hangars
39: Vacant
40: Rental Car Ready / Return Parking Lot
41: Employee Parking Lot
42: CNG / Clean Energy Station
43: Holiday Economy Parking Lot

Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

0
1000'

🟧 On-Airport Facility
▨ Airport Operations Area
-·- Airport Property Line

Airport Facilities / Infrastructure Map

Figure 2-7

Palm Springs International Airport
Master Plan

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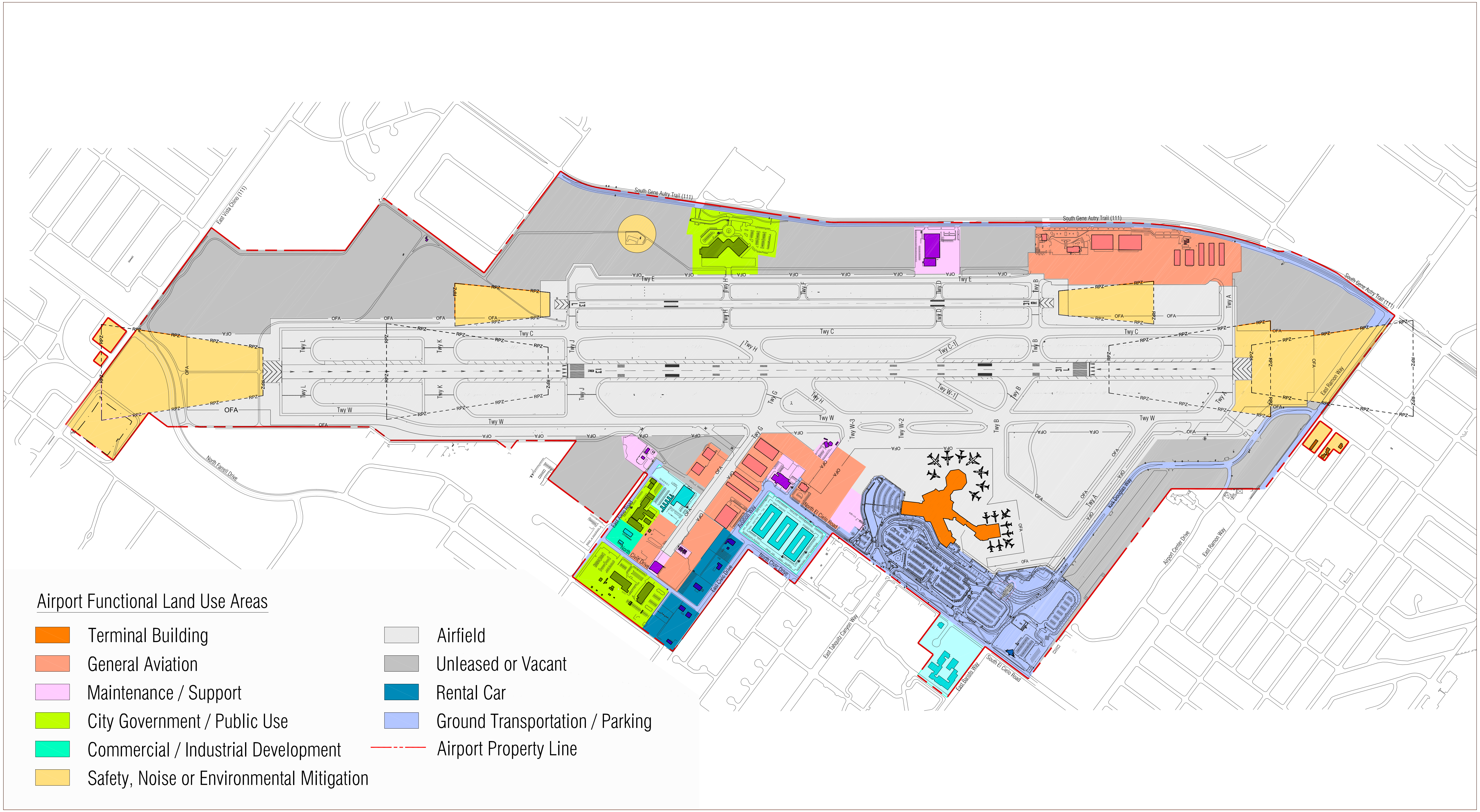
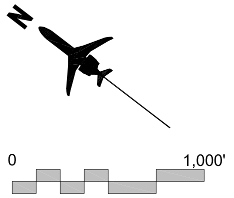


Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE



Existing Land Use Map

Figure 2-8

Palm Springs International Airport
Master Plan

2.9-1 Runways

Palm Springs International Airport operates two parallel runways, Runways 13R-31L and 13L-31R. Runway 13R-31L is designated for commercial air-carrier service and for large general aviation aircraft. Constructed of asphalt concrete and treated with a porous friction course, Runway 13R-31L is 10,001 feet long by 150 feet wide.

Runway 13R-31L has a 200-foot blast pad on each end of the runway to protect the runway pavement from the effects of jet blast. Each end of the runway has a displaced landing threshold in order to reduce and mitigate aircraft noise. Runway 13R has a 3,000 foot displaced threshold and Runway 31L has a 1,500 foot displaced threshold. The declared distances available for Runway 13R-31L are summarized in **Table 2-2**. Runway 13R has additional declared distance restrictions in order to provide for a standard runway safety area at the south end of the runway. Runway 13R-31L is constructed on a 0.7 percent slope. The east end has an elevation of 398 feet above mean sea level (MSL) and the west end has an elevation of 477 feet above mean sea level (MSL).

Table 2-2: Runway 13R-31L Declared Distances

Declared Distance	Runway 13R Distance	Runway 31L Distance
Take Off Distance Available (TODA)	10,000 feet	10,000 feet
Take Off Run Available (TORA)	10,000 feet	10,000 feet
Landing Distance Available (LDA)	6,857 feet	8,500 feet
Accelerate-Stop Distance Available (ASDA)	9,857 feet	10,000 feet

Source: FAA Facility Database

Runway 13L-31R dimensions 4,952 feet long by 75 feet wide, and is designated for small and medium general aviation aircraft. Each end of the asphalt constructed runway has a 150-foot blast pad. The threshold of Runway 13L is aligned with the end of the displaced threshold of Runway 13R. Runway 13L-31R is constructed on a 0.8 percent slope. The east end has an elevation of 407 feet above mean sea level (MSL) and the west end has an elevation of 449 feet above mean sea level (MSL).

Finally, the two parallel runways, separated centerline-to-centerline by 700 feet, allow for simultaneous operations on both runways in Visual Meteorological Conditions (VMC). Simultaneous operations allow the Airport to segregate slower general aviation from commercial traffic during peak periods.

Runway pavement bearing strengths define the weight limits at or below with which an aircraft may operate on the runways. Pavement bearing strengths are designed to meet the maximum operational weight of critical aircraft operating on the airfield. Bearing strengths are defined for Single Wheel (SW), Dual Wheel (DW), Dual Tandem (DT), and Double Dual Tandem (DDT) landing gear systems. A Single Wheel landing gear system, as typically found on light general aviation aircraft, refers to aircraft with a single wheel on each side of the main landing gear system. A Dual Wheel landing gear system, as found on a Boeing 737, refers to aircraft with two wheels on each side of the main landing gear. A Dual Tandem landing gear system, as found on a Boeing 757, refers to aircraft with four wheels on each side of the main landing gear. A double Dual Tandem landing gear system, as found on a Boeing 747, refers to aircraft with two sets of four wheels on each side of the main landing gear.

Pavement strengths are identified using the Pavement Classification Number (PCN) system, an ICAO rating system for identifying the load-carrying capacity of a pavement for the selected critical or most demanding airplane used. The PCN is a series of five coded numbers of the following:

- Numerical PCN value,
- Pavement type,
- Subgrade category,
- Allowable tire pressure, and
- Method used to determine the PCN.

The numerical PCN value is a relative indication of load-carrying capacity of a pavement in terms of a standard single wheel load at a tire pressure of 181 psi.

The pavement type is either flexible, "F", or rigid, "R". Flexible pavements support loads through bearing rather than flexural action and comprise several layers of selected materials to distribute loads from the surface to the layers beneath (e.g. asphalt). Rigid pavements support loads through a single layer (e.g. concrete).

The subgrade strength category is a coded strength of the pavement subgrade (what is underneath the pavement) based on pavement types. There are four standard subgrade strengths categories identified each for flexible and rigid pavements. The categories and their codes are high, "A", medium, "B", low, "C", and ultra low, "D". A high strength category would be typical for a reinforced concrete subbase. An ultra low strength category would be typical for uncompacted soil.

The allowable tire pressure is the pressure limit for the pavements. There are four tire pressure categories with a specified code and tire pressure range as shown below.

- High (W) – no pressure limit
- Medium (X) – pressure limited to 218 psi (1.6 MPa)
- Low (Y) – pressure limited to 145 psi (1.00 MPa)
- Very Low (Z) – pressure limited to 73 psi (0.50 MPa)

Two pavement evaluation methods exist that are used to determine the PCN. If the evaluation represents the results of a technical study, the evaluation method is coded. "T". If the evaluation is based on "using airplane" experience, the evaluation method is coded, "U".

Table 2-3 summarizes the runway pavement bearing strengths and pavement classification number for each runway.

Table 2-3: Runway Pavement Bearing Strengths and Pavement Classification Number

Landing Gear System	Runway 13R-31L	Runway 13L-31R
Single Wheel (SW)	105,000 lbs	12,500 lbs
Dual Wheel (DW)	200,000 lbs	60,000 lbs
Dual Tandem (DT)	330,000 lbs	N/A
Double Dual Tandem (DDT)	800,000 lbs	N/A
Pavement Classification Number (PCN)	54/F/B/W/T	5/F/B/W/T

Source: FAA Facility Database

The operating pavement bearing strength requirements of selected aircraft are presented in **Table 2-4** for comparative purposes.

Table 2-4: Selected Aircraft Pavement Bearing Strength Requirements

Aircraft	Max Gross Takeoff Weight	Landing Gear Type
Boeing 737-400	150,000 lbs	Dual Wheel
Boeing 737-700	154,500 lbs	Dual Wheel
Boeing 737-800	174,200 lbs	Dual Wheel
Airbus A320	145,505 lbs	Dual Wheel
Boeing 757-200	255,500 lbs	Dual Tandem
Boeing 767-300	350,000 lbs	Dual Tandem
Boeing 777-200	580,000 lbs	Triple Tandem
Boeing 747-400	870,000 lbs	Double Dual-Tandem
McDonald Douglas MD-11	602,500 lbs	Dual Tandem

Source: Boeing and Airbus Product Specifications

Aircraft Design Group (ADG) is a function of the wingspan of an aircraft. **Table 2-5** presents the ADG classifications for aircraft. Runway 13R-31L meets the design standards for ADG V aircraft. Runway 13L-31R meets the design standards for ADG II aircraft.

Table 2-5: Aircraft Design Group (ADG) Classification

Design Group	Wingspan Range	Example
I	< 49 feet	Cessna 152, Beechcraft A36
II	49-78 feet	ERJ 145, EMB-120, CRJ 100
III	79-117 feet	B-737, MD-80, A-320
IV	118-170 feet	B-757, B-767, A-300
V	171-213 feet	B-747, A-340, MD-11, B-787
VI	214-262 feet	A-380, B-747-8

Source: FAA Advisory Circular 150/5300-13 Airport Design

2.9-2 Runway Use Configuration

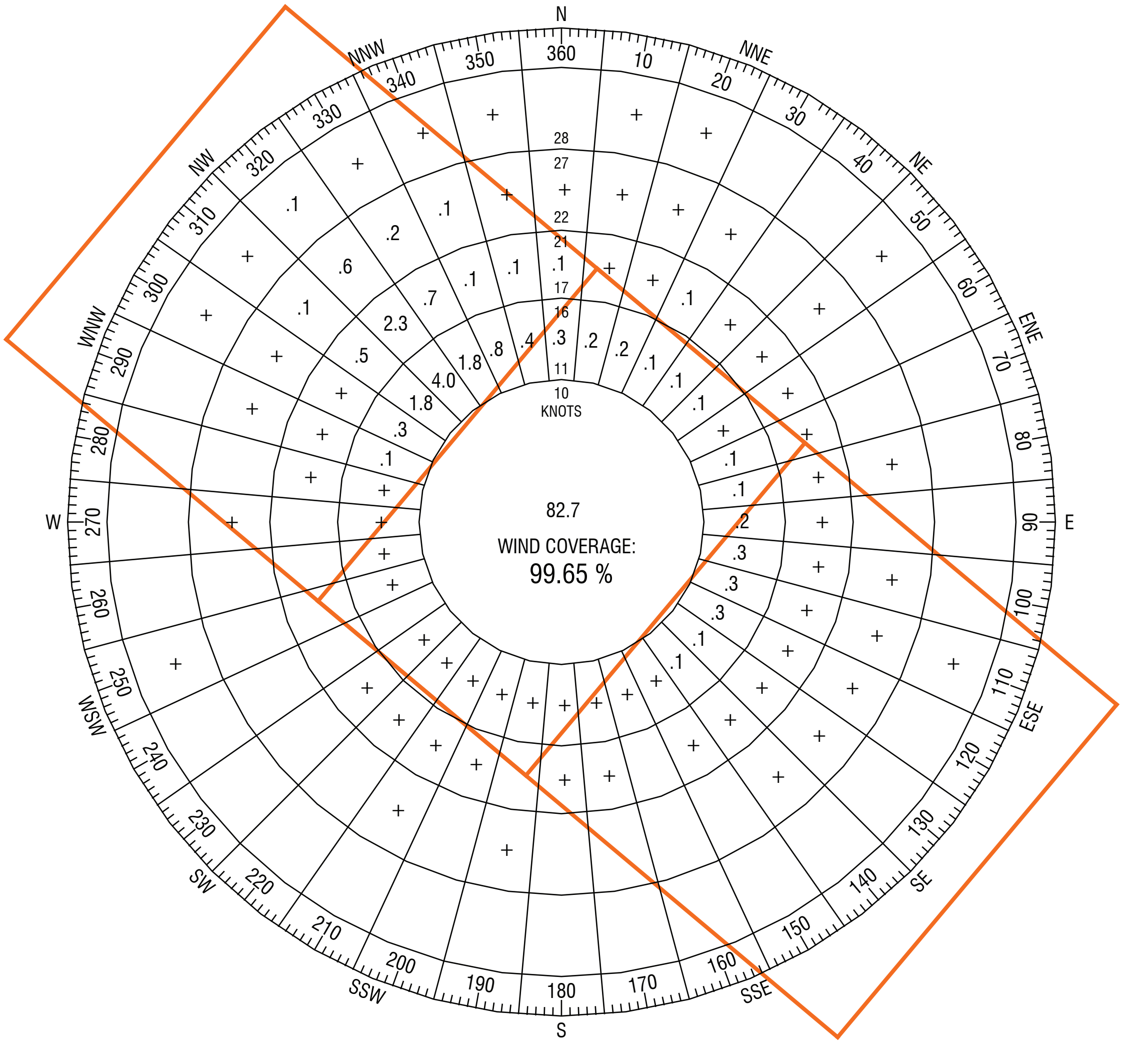
The most important consideration in determining runway use configurations is the speed and direction of the wind. Both takeoff and landing distances are affected by the speed and direction of the wind. Operationally, it is preferable for aircraft to take off and land into the wind. A headwind reduces the amount of speed required by an aircraft to take off and reduces the groundspeed upon touchdown. When a runway is being planned, many years of historical wind data are used to determine the optimal runway direction. It is desirable for aircraft to operate with a minimal cross-wind component. As shown in **Figure 2-9**, the Airport's wind coverage diagram, Runways 13R-31L and 13L-31R cover 99.65 percent of the historical wind observations at PSP. When the cross-wind component of the wind goes above 20 knots, the runways may be considered inoperable for some air carrier aircraft. General aviation aircraft are normally not allowed to depart and land when the crosswind component of the wind exceeds 12.5 knots. At PSP this occurs approximately 1.08% of the year.

The Airport primarily operates in two flow patterns; West Flow and East Flow. Under West Flow, aircraft arrive and depart to Runways 31L and 31R. Under East Flow, aircraft arrive and depart to Runways 13L and 13R. As a noise mitigation measure, East Flow is considered the preferred aircraft flow pattern when calm winds prevail. The percentages of time the Airport operates in each flow are presented in **Table 2-6**. The Airport operates in East Flow and West Flow respectively approximately 42% and 58% of the time. There are, however, infrequent instances when the Airport is operating in West Flow where pilots request counter-flow "head-to-head" operations.

Table 2-6: Airport Directional Flow Percentages

Direction	Description	Percentage
West Flow	Aircraft take off and depart from Runways 13L and 13R	58%
East Flow	Aircraft take off and depart from Runways 31L and 31R	42%

Source: HNTB Analysis



Source: HNTB Analysis,
Station = Palm Springs International Airport (Data Collected 1994-2004)

PSP Wind Coverage Diagram

Figure 2-9

PALM SPRINGS INTERNATIONAL AIRPORT

Palm Springs International Airport
Master Plan

2.9-3 Runway Capacity / Annual Service Volume

Annual service volume is a FAA derived metric for estimating the Airport's annual capacity. The calculation generally takes into account runway use, runway exit locations, aircraft fleet mix and weather. As the Airport's annual total aircraft operations approaches the annual service volume, delays are experienced in the range of one to four minutes of annual average delay per operation. The annual service volume methodology is described in the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5060-5: Airport Capacity and Delay, published on September 23, 1983.

The annual service volume (ASV) for PSP was determined using the fleet mix breakdown taken from Official Airline Guide (OAG) monthly departure schedules and aircraft operations breakdown statistics for PSP. **Table 2-7** below presents the breakdown of operations by aircraft classification for each month in 2007.

Table 2-7: Aircraft Operations by Month and by Aircraft Weight Classification (2007)*

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Air Carrier / Commuter	Itinerant	3,036	2,904	3,298	2,930	2,350	1,790	1,818	1,802	1,782	2,146	2,598	2,772
Air Taxi	Itinerant	795	872	1173	807	535	251	190	96	215	376	786	569
General Aviation	Itinerant	3,799	3,736	4,660	3,835	3,381	2,547	1,723	1,659	1,747	2,320	2,984	2,347
	Local	782	758	1,406	1,256	1,464	1,122	1,010	942	838	1,280	918	962
Military	Itinerant	81	182	63	208	96	66	115	82	57	127	106	67
	Local	0	8	0	0	4	18	2	4	16	0	2	6
	Total	8,493	8,460	10,600	9,036	7,830	5,794	4,858	4,585	4,655	6,249	7,394	6,723
	Heavy Aircraft	0	0	0	0	0	0	0	0	0	0	0	0
	Large Aircraft	6,156	6,083	7,089	6,206	5,155	3,912	3,313	3,215	3,253	4,129	5,093	4,723
	Small Aircraft	2,337	2,377	3,511	2,830	2,675	1,882	1,545	1,370	1,402	2,120	2,301	2,000
	Total	8,493	8,460	10,600	9,036	7,830	5,794	4,858	4,585	4,655	6,249	7,394	6,723

Source: HNTB Analysis , Official Airline Guide (OAG)
Notes: * All terms are defined in the glossary of this Master Plan Update

The operations breakdown can be further split into the FAA's aircraft weight classifications. The Airport's mix index is expressed by the mathematical sum of the percentage of large aircraft operations weighing between 12,500 and 300,000 pounds and three times the percentage of heavy aircraft operations weighing over 300,000 pounds. For itinerant general aviation aircraft, it is assumed, based on interviews with the FBOs at PSP, the breakdown is 80% large and 20% small aircraft. Palm Springs International Airport's resultant mix index is 69.

The consistently clear weather at Palm Springs International Airport enables the Airport to operate under Visual Meteorological Conditions (VMC) approximately 97 percent of the time. Visual Meteorological Conditions require a minimum visibility ceiling of 1,000 feet and minimum horizontal visibility of three miles. The Airport operates under Instrument Meteorological Conditions (IMC) approximately 3 percent of the time. When the Airport operates under IMC, the ceiling is less than 1,000 feet and/or the horizontal visibility is less than three miles. The Airport is effectively reduced to using only Runway 13R-31L during IMC.

The hourly capacity of PSP's runway system, under VMC, is determined from Section 3-2 of the AC, *Hourly Capacity of the Runway Component*. The Airport has two parallel runways separated by 700 feet. Runway 13R-31L dimensions 10,000 feet long by 150 feet wide. It is adequate for large aircraft operations. Runway 13L-31R dimensions 4,925 feet long by 75 feet wide. The runway width limits the runway exclusively to small aircraft. Operations at the Airport are approximately balanced between departures and arrivals, and it is assumed, for the purposes of this capacity calculation, that the percent of arrivals at the Airport is 50 percent.

Approximately 10 percent of the operations at the Airport are touch-and-go operations. Touch-and-go operations take place when a pilot lands and departs without coming to a full stop. Touch-and-go operations are generally used for instructive purposes to expose a student pilot to multiple take offs and landings in a relatively short amount of time. Officially, a touch-and-go is recorded as two operations by the Air Traffic Control Tower.

Another important contributor to runway capacity is the location number and adequacy of exit taxiways. The location of exit taxiways directly correlates with runway occupancy time. The higher the runway occupancy time, the lower the runway capacity, as it takes longer for aircraft to clear the runway. The Airport's exit taxiways are located in key positions that allow aircraft to efficiently clear the runway.

Figure 3-5 of the AC shows that PSP's hourly runway capacity base is approximately 80 aircraft operations. The touch-and-go adjustment factor is 1.03. The runway exit factor is 1.0. The hourly capacity at the Airport under VMC is approximately 82 operations. When IMC prevails, according to Section 4-4 of the AC, the runway capacity is reduced to approximately 56 operations.

The weighted runway capacity is a function of the different runway-use configurations used over the course of a year, the percent of time each runway-use configuration is used, the hourly capacity for each runway-use configuration, and the ASV weighting factor. The weighted capacity expression is:

$$C_w = \left(\frac{(p_1 \cdot c_1 \cdot w_1) + (p_2 \cdot c_2 \cdot w_2)}{(p_1 \cdot w_1) + (p_2 \cdot w_2)} \right)$$

Cw = The weighted hourly capacity
p = The percent of time each configuration is used
c = The hourly capacity of each configuration
w = The ASV weighting factor (based on the percent of maximum capacity)

The weighted capacity is approximately 74 operations per hour. The ratio of annual demand to average daily demand at the Airport is approximately 248. The ratio of average daily demand to average peak hour demand during the peak month (March) is approximately 7. The resultant Annual Service Volume for Palm Springs International Airport is approximately 130,000 operations. An annual service volume is highly dependent on current aviation activity. The ASV for Palm Springs International Airport should be used only as a benchmark for operational characteristics. It is not intended to be identified as the maximum theoretical capacity of the Airport.

2.9-4 Taxiways

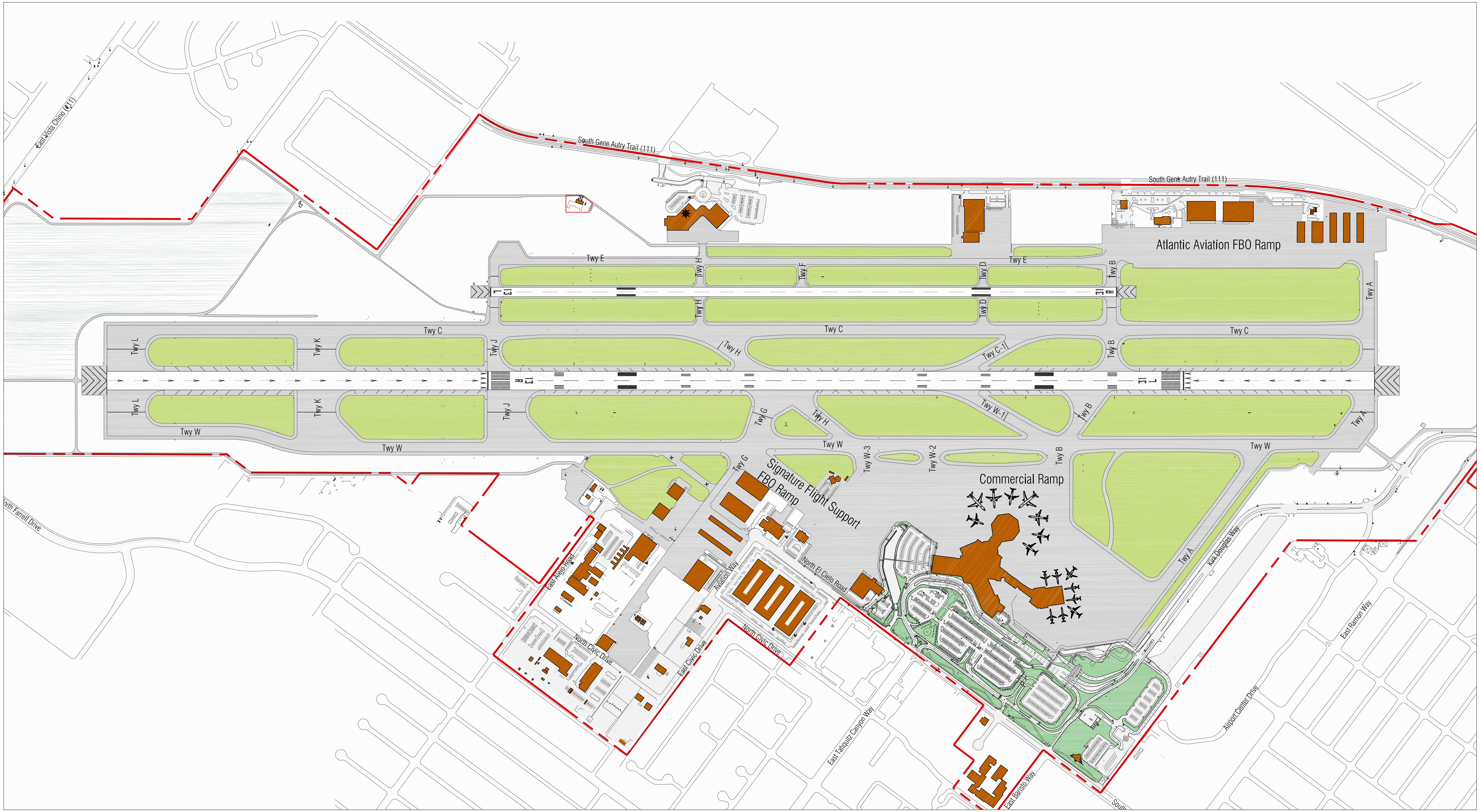
The taxiway system at PSP, depicted on **Figure 2-10** is a network of parallel, connecting, runway exit and runway access taxiways. Runway 13R-31L is served by two full length parallel taxiways, Taxiways C and W. Taxiway W parallels Runway 13R-31L to the west and is separated by 500 feet, runway centerline to taxiway centerline. At the intersection of Taxiway K, Taxiway W bends 100 feet closer to Runway 13R-31L. Taxiway C parallels Runway 13R-31L to the east and Runway 13L-31R to the west. Taxiway C is located 400 feet east of Runway 13R-31L and 300 feet west of Runway 13L-31R. There have been occasional reports of pilots recognizing Taxiway C as a runway as opposed to a taxiway despite the large "taxiway" markings painted on the surface. Taxiway E is a full length parallel taxiway to Runway 13L-31R and is separated by a centerline-to-centerline distance of 250 feet to the east. The taxiway system is presented in **Table 2-8**.

Table 2-8: Taxiway System Description

Taxiway	Width	Description
A	75 feet	Connects the south ends of Runways 13L-31R and 13R-31L with full length parallel Taxiways C and W
B	75 feet	Exit taxiway for Runway 13R-31L connecting the runway with Taxiway W and the terminal area, also connects to Runway 13L-31R and Taxiway C
C	75 feet	Full length parallel taxiway west of Runway 13R-31L
C-1	75 feet	East Flow high speed exit taxiway linking Runway 13R-31L with Taxiway C
D	50 feet	Connects the Sky West maintenance facility with Runway 13L-31R and Taxiway C
E	50 feet	Full length parallel taxiway east of Runway 113L-31R
F	50 feet	Exit taxiway for Runway 13L-31R connecting the runway with Taxiway E
G	75 feet	Exit taxiway connecting Runway 13R-31L with Taxiway W
H	75 feet	Cross-field taxiway connector linking Taxiway W with Taxiway E
J	75 feet	Cross-field taxiway connector linking Taxiway W with Taxiway E, also serves as a runway entrance and exit at the Runway 13R displaced threshold
K	300 feet	Runway 13R-31L runway exit, entrance, and holding point at the base of the bend in Taxiway W
L	300 feet	Runway 13R-31L runway exit, entrance, and holding point at the far west end of the runway
W	75 feet	Full length parallel taxiway east of Runway 13R-31L and west of Runway 13L-31R, also referred to as a centerline taxiway
W-1	75 feet	East flow high speed exit taxiway linking Runway 13R-31L with taxiway W
W-2	75 feet	Connects passenger terminal area with Taxiway W

Source: HNTB Analysis

The taxiways west of Runway 13R-31L are designed to meet ADG V standards. The centerline taxiway can be used up to ADG V aircraft when Runway 13L-31R is not in use. The taxiways east of Runway 13L-31R are designed to meet ADG II standards.



Source: City of Palm Springs Department of Aviation

🟧 On-Airport Facility

▨ Airport Operations Area

Airport Property Line

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

Airport Ramps / Taxiway System

Figure 2-10

Palm Springs International Airport
Master Plan

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2.9-5 Aircraft Ramps and Parking

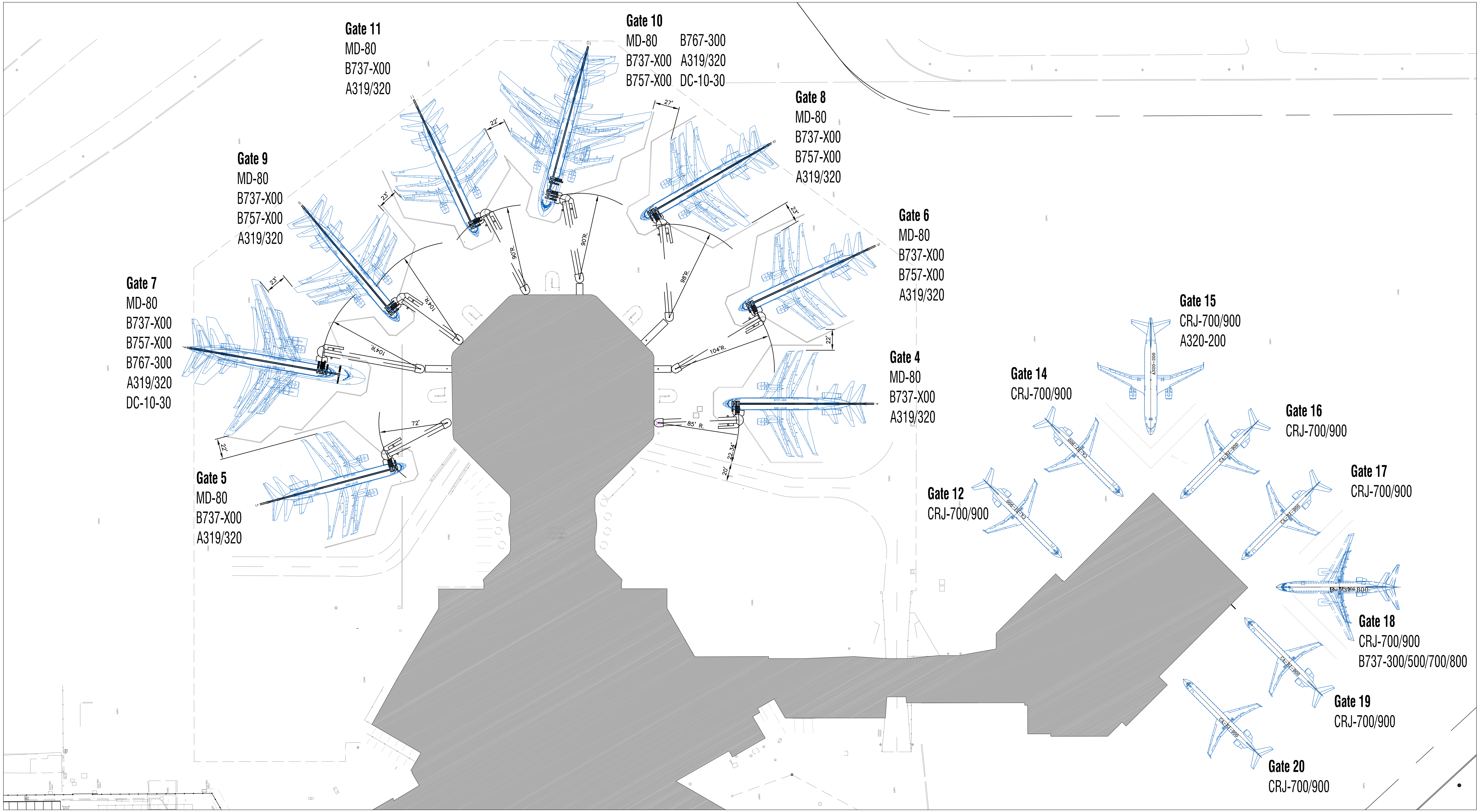
Ramp areas are paved portions of the airfield where aircraft stop for loading and unloading of passengers, cargo, maintenance, and aircraft storage. It is also common to utilize ramp areas for aircraft ground servicing equipment storage. Ramp areas are considered non-movement areas by the FAA as they are not controlled by the ATCT and have no restrictions on obstructions. **Figure 2-10** depicts the various ramp areas at PSP, and **Table 2-9** presents the areas of each ramp in square yards and acres.

Table 2-9: Ramp Area Summary

Ramp	Area (Square Yards)	Area (Acres)
Terminal Ramp	199,430	41.2
Atlantic Aviation Ramp	89,400	18.5
Signature Flight Support Ramp	84,000	17.4
Maintenance Ramp	11,630	2.4
Total Ramp Area	384,460	79.5

Source: HNTB Analysis

The Terminal Ramp, located in the southwest corner of the airfield, encompasses the entire airside perimeter of the Bono and Regional concourses. The Terminal Ramp provides for 8 marked aircraft parking positions at the Bono Concourse and 8 marked positions at the Regional Concourse. All of the marked positions at the Bono Concourse are served by loading bridges (Gates 4-11), which allow passengers and employees to transfer between the Bono Concourse building and the aircraft within an enclosed and elevated mechanical walkway. Four of the aircraft parking positions at the Bono Concourse (Gates 5, 7, 8 and 10) are Aircraft Design Group IV capable and are served by loading bridges. The four remaining aircraft parking positions at the Bono Concourse are Aircraft Design Group III capable gates. The Regional Concourse's eight marked positions accommodate aircraft up to Aircraft Design Group III and are all ground-loaded positions. **Figure 2-11** presents the graphical layout of parking positions at the Terminal Ramp and the largest aircraft that can be accommodated at each position.



Source: City of Palm Springs Department of Aviation

N

0 100'

▨ Terminal Building

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

Aircraft Parking Positions

Figure 2-11

Palm Springs International Airport
Master Plan

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2.9-6 Remain-Over-Night Parking

The location of the Airport in the southwestern quadrant of the United States contributes to its role as an airline "spoke" airport. As a spoke airport, airlines do not utilize PSP as a hub for connecting through-passengers to other final destinations. Instead, the airlines use PSP as a means to take passengers to/from their large hub airports, which are strategically positioned throughout the continental United States. Spoke airports generally have high demand for Remain-Over-Night (RON) parking. Typically the first round of flights each day is aircraft outbound from the spoke airports to the hubs, while the last round of flights is outbound from hubs to spoke airports. The last aircraft arriving at night and leaving first the next morning are parked overnight at a terminal passenger gate. If the number of overnight aircraft exceeds the number of available gates, these additional aircraft must be parked at RON positions. RON positions are apron parking positions for aircraft that are not adjacent to the terminal building. The Airport does not utilize additional ramp space for RON parking as the Terminal Ramp has sufficient capacity for the existing demand.

2.9-7 Pavement Use and Management

Airport pavement management is governed by FAA Advisory Circular 150/5380-6B: Guidelines and Procedures for Maintenance of Airport Pavements, published September 28, 2007. Airports receiving Federal funding are required to have a pavement maintenance management program in place. At minimum the program must contain:

- Pavement Inventory detailing the *location of all runways, taxiways, and aprons, pavement dimensions, type of pavement, year of construction or most recent rehabilitation, and whether Federal financial assistance was used to construct, reconstruct, or repair the pavement.*
- An inspection schedule that includes *a detailed inspection of airfield pavements at least once a year* and a monthly drive-by inspection.
- A minimum of five-year records detailing the inspections and maintenance performed.
- Have the program information readily available to the FAA.
- *Identify funding and other resources available to provide remedial and preventive maintenance activities.*

Visual surveys of the pavement condition at the Airport are conducted on a regular basis, in accordance with FAA requirements. Pavements are rated using a standard Pavement Condition Index (PCI) with a scale of 0 to 100 (failed to excellent). The most recent survey, conducted in 2008, indicated that approximately 25% of pavement segments were rated 86-100 (excellent), 31% were rated 71-85 (very good), 8% were rated 56-70 (good), 9% were rated 41-55 (fair), 11% were rated 26-40 (poor), and 16% were rated 0-25 (very poor to failed).

The pavement composing Runway 13R-31L is generally in very good condition. On average, the runway dropped approximately 25 points in the PCI scoring from testing done in 2001. It is anticipated that within a five year time frame, Runway 13R-31L could undergo rehabilitation. The runway was last rehabilitated in 1995. The Airport will close the runway in the summer months to complete the rehabilitation process. During the closure, center Taxiway C is set up as a temporary runway. The Airport cannot use Taxiway C and Runway 13L-31R simultaneously. The vast majority of poor to failing pavement can be found near the Signature Flight Support FBO apron areas.

2.9-8 Surveillance Equipment and Navigational Aids

Existing runway markings, lighting, and landing navigational aids (NAVAIDS) are presented in **Table 2-10**.

Table 2-10: Runway Surveillance Equipment and Navigational Aids Inventory

Runway	Marking	Lighting	NAVAIDS
13R	Precision	HIRL, VASI, REIL	VOR, RNAV
31L	Precision	HIRL, VASI, REIL	VOR
13L	Precision	MIRL, PAPI, REIL	VOR, RNAV
31R	Precision	MIRL, PAPI, REIL	VOR, RNAV

Source: AirNav Facility Database
HIRL – High Intensity Runway Lights
MIRL – Medium Intensity Runway Lights
REIL – Runway End Identification Lights
VASI – Visual Approach Slope Indicator
PAPI – Precision Path Approach Indicator

Precision pavement markings identify runway centerline, displaced threshold, runway end threshold, touchdown point, aircraft hold location, runway edge and runway name designation. All pavement markings on the runways are in good condition.

Runway lighting is used to ensure safe navigation during periods of low visibility or at night. Runway 13R-31L is outfitted with High Intensity Runway Lighting (HIRL), while Runway 13L-31R is outfitted with Medium Intensity Runway Lighting (MIRL). Air Traffic Controllers have the ability to adjust the intensity of the runway edge lights depending on the visibility or time of day. In addition to the runway lighting system, all airfield taxiways are equipped with High Intensity Taxiway Lighting (HITL). Two synchronized flashing lights on the lateral sides of each runway end, known as Runway End Identification Lights (REIL), alert arriving aircraft as to the location of the end of the runway. An airport beacon, located on top of the Palm Springs Air Museum, projects rotating beams of white and green light spaced 180 degrees apart.

The six-box Visual Approach Slope Indicators (VASIs) installed on the left side of each end of Runway 13R-31L enable an aircraft operator to determine whether or not they are on the 3.25 degree approach angle. The mountainous geography of the region restricts the usable range of the VASI to 3 nautical miles. Similar in function, a four-box Precision Approach Path Indicator (PAPI) guides pilots to the 3.50 degree approach glide path on Runway 13L-31R.

Two Very-High-Frequency Omnidirectional Ranges (VORs) collocated with Tactical Air Navigation (TACAN) support Palm Springs Airport. The Palm Springs VORTAC is located 4.5 nautical miles northeast of the Airport and the Thermal VORTAC is located 20 nautical miles southeast of PSP.

An Airport Surveillance Radar (ASR-9) displays both weather and aircraft simultaneously for PSP's terminal airspace. A technical incompatibility sometimes exists between the region's many wind turbines and the ASR-9. When the velocities of the turbine blades exceed 60mph, the radar will sense the movement of some higher elevation units and the radar system has to electronically adjust itself in order to compensate. Although safety is not compromised, the FAA systems require ongoing attention and adjustment to properly address the large growing wind farm.

In accordance with Code of Federal Regulations (CFR), Title 14, a Part 139 certified airport is required to have runway and taxiway signage that meet federal design standards. Palm Springs International Airport has a signage system that includes signs for runway and taxiway designations, runway length remaining, preferential flow direction, runway exits and runway entrances.

2.9-9 Airspace

Classification of airspace dictates the level of involvement by Air Traffic Control (ATC). Very large airports, such as Los Angeles International Airport, operate under Class B airspacewhere all aircraft are required to obtain ATC clearance when entering that airspace. The airspace above Palm Springs International Airport is Class D airspace. Aircraft operating under Instrument Flight Rules (IFR) are separated from each other by ATC. Aircraft operating under Visual Flight Rules (VFR) are given traffic updates about other aircraft in the sector. Class D airspace governs flights from ground level to approximately 2,500 feet above the surface.

Over the course of a flight, different ATC facilities assume responsibility for handling a flight. On the ground and in the air within a 5 mile radius of the Airport, PSP Air Traffic Control Tower (ATCT) staff communicates with and give direction to pilots. Within an approximate 40 mile radius of PSP, the Southern California Terminal Radar Approach Control (TRACON) facility is responsible for all aircraft departure and arrival clearances. Beyond the TRACON's jurisdiction, the Los Angeles Air Route Traffic Control Center (ARTCC), located in Palmdale, assumes responsibility for flights. The TRACON provides approach and departure services for Palm Springs International Airport between the hours of 6:00 a.m. and 11:00 p.m.. Approach and departure service is maintained between 11:00 p.m. and 6:00 a.m. by the ARTCC.

From an airspace perspective, operations from Bermuda Dunes Airport directly influence operations at Palm Springs International Airport. The departure path at Bermuda Dunes is slightly offset with the approach path to Palm Springs. Rapidly ascending aircraft from Bermuda Dunes must be carefully integrated with approaching aircraft to PSP.

Published routes have been developed for arriving and departing aircraft. Standard Terminal Arrivals (STARs) control arrivals, and Departure Procedures (DPs) control departures. The STARs and DPs are primarily used by faster moving, higher performance aircraft. Lower performance aircraft and those going to a routing not served by a STAR or DP are given directions by air traffic control, called RADAR vectors. Since PSP is far enough from other large airports, there are no significant airspace conflicts between air routes serving PSP and air routes serving other large airports within the region. Airport staff reports that it is not uncommon for airline flights between other airports to be diverted to PSP because of inclement weather in other cities or for in-flight emergencies with ill passengers, as well sometimes for minor mechanical issues with the aircraft.

2.9-10 Noise Management

The location of the Airport within a populated residential area has necessitated noise management and mitigation programs. The displacement of runway threshold on both ends of Runway 13R-31L ensures that aircraft are flying at a higher altitude over residential neighborhoods upon final approach, thus reducing perceived noise. Runway 13R, used for approaches from the west, is displaced 3,000 feet while Runway 31L is displaced 1,500 feet. In addition to the implementation of displaced thresholds, the Airport has constructed a noise wall and noise berm on the northwest edge of Airport property to mitigate noise impacts from aircraft in nearby residential areas. Palm Springs International Airport also employs some voluntary noise abatement procedures. Noise abatement procedures are policies and procedures that are designed to minimize aircraft noise experienced by neighboring communities. The programs in place at PSP include encouraging noise abatement departure profiles by jets, a voluntary restriction of air carrier aircraft from 11 p.m. to 6 a.m., delayed thrust application for departures until the aircraft is aligned with the runway centerline, restrictions on engine run-up maintenance, maintaining aviation compatible land-use with the 60 Community Noise Equivalent Level (CNEL), and had completed a federally funded sound insulation program for homes within the 65 CNEL.

The Airport has identified two areas on the airfield where engine maintenance run-ups are allowed: Taxiway A with the aircraft tail oriented toward Runway 31L and Taxiway W north of Taxiway B with the tail oriented to the north. The holding apron at the intersection of Taxiways A and W for Runway 31L departures and on Taxiway C for departures on Runway 13R serve as locations for routine pre-flight engine run-ups. The SkyWest maintenance facility has a hush-house that enables small turboprop aircraft to conduct engine maintenance run-ups.

2.10 PASSENGER TERMINAL

The passenger terminal complex, depicted on **Figure 2-12,** consists of a pier configuration linking the following building components:

- One-story terminal processor with a mezzanine
- Two-story main concourse named the “Bono Concourse” for mainline aircraft
- One-story Regional Concourse for regional jets and turbo prop aircraft.

The above components are connected by an open air landscaped plaza and pedestrian walkway. The terminal configuration and architecture complement the image of Palm Springs, its fair weather and attractive environment.

2.10-1 Terminal Complex

The total area of the terminal complex is approximately 247,477 square feet. The total area includes both enclosed portions of the terminal facilities as well as open-air portions primarily utilized for circulation. A functional breakdown of the terminal complex area is shown in the **Table 2-11.**

Table 2-11: Terminal Complex Functional Areas

Functional Area	Area (square feet)
Airline Operations	12,846
Airline Ticketing	2,369
Airline Holdrooms	31,005
Post Security Circulation Areas	54,198
Pre Security Circulation Areas	24,325
Restrooms (Public)	6,179
Concession/Concession Storage	15,253
Baggage Claim	12,731
PSP Administration and Operations	12,240
Ground Service Equipment Parking/Staging	12,883
Utilities and Building Maintenance	23,653
TSA SSCP and Offices	9,555
Rental Car Reservation Counters	2,843
United Service Organization (USO) Offices	1,252
Total Area	247,477

Source: GPA Architects Analysis

The original passenger terminal complex was initially constructed and put into service in 1967. Since its initial construction, the passenger terminal complex has been remodeled and expanded. The ticketing lobby and baggage claim area were enlarged in 1992. The security screening checkpoints and EDS screening areas were enlarged in 2007. A new two-story concourse for mainline aircraft gates was constructed and opened in 1999. This was followed in Fall 2007 by the construction of a new Regional Concourse for regional jets and turbo prop aircraft. The Airport has a total of 16 gates, with 8 at the Bono Concourse and 8 at the Regional Concourse. The current preferential gate utilization is shown in **Table 2-12** below.

Table 2-12: Airline Gate Utilization

Airline	Concourse	Gate Number(s)	Aircraft Size
Alaska Airlines	Bono	10, 11	737
Allegiant Air	Bono	11	MD-80
American Airlines	Bono	4, 6, 8	MD-80
Delta Connection	Regional	17, 18, 19, 20	RJ
Horizon Air	Regional	12, 14	RJ
Northwest Airlines	Bono	8	A320
Sun Country	Bono	9	737
United Airlines / United Express	Bono, Regional	7, 17, 18, 19, 20	A320/RJ
US Airways Express	Regional	15, 16	RJ
WestJet	Bono	6, 8	737

Source: Palm Springs International Airport website (September 26, 2008)
Note: Airline gate utilization changes monthly.

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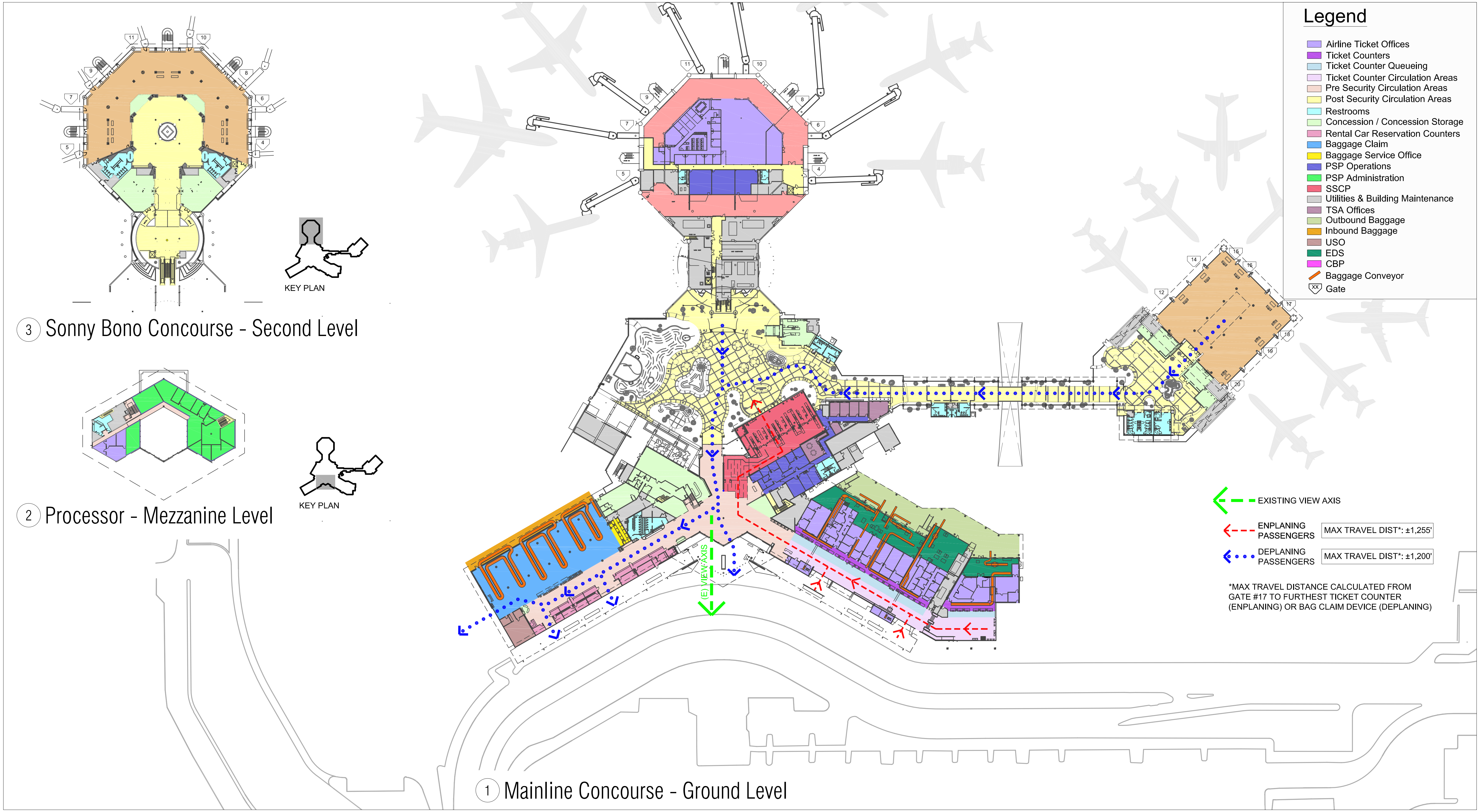

3 Sonny Bono Concourse - Second Level

2 Processor - Mezzanine Level

1 Mainline Concourse - Ground Level

Legend

- 🟪 Airline Ticket Offices
- 🟪 Ticket Counters
- 🟦 Ticket Counter Queueing
- 🟪 Ticket Counter Circulation Areas
- 🟫 Pre Security Circulation Areas
- 🟨 Post Security Circulation Areas
- 🟦 Restrooms
- 🟩 Concession / Concession Storage
- 🟪 Rental Car Reservation Counters
- 🟦 Baggage Claim
- 🟨 Baggage Service Office
- 🟦 PSP Operations
- 🟩 PSP Administration
- 🟥 SSCP
- ⬜ Utilities & Building Maintenance
- 🟪 TSA Offices
- 🟩 Outbound Baggage
- 🟧 Inbound Baggage
- 🟫 USO
- 🟩 EDS
- 🟪 CBP
- ⟋ Baggage Conveyor
- ⬠ Gate

← - - EXISTING VIEW AXIS

← - - ENPLANING PASSENGERS | MAX TRAVEL DIST*: ±1,255'

← • • • DEPLANING PASSENGERS | MAX TRAVEL DIST*: ±1,200'

*MAX TRAVEL DISTANCE CALCULATED FROM GATE #17 TO FURTHEST TICKET COUNTER (ENPLANING) OR BAG CLAIM DEVICE (DEPLANING)

Terminal Complex - Overall

Figure 2-12

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT

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2.10-2 Terminal Processor

The terminal processor is depicted on **Figure 2-13.** It contains the following major functional areas:

- Pre Security Circulation (central lobby, ticketing lobby, baggage claim / rental car reservation lobby)
- Inbound Baggage and Baggage Claim
- Rental Car Reservations Area
- USO Offices
- Airline Ticketing
- Airline Operations (airline ticketing offices, baggage screening and make-up area)
- Concession / Concession Storage (Pre Security)
- Transportation Security Administration (TSA) Security Screening Checkpoint (SSCP) & Offices
- Airport Administration Area
- Restrooms

The following sections provide a detailed description of each of the above functions.

Pre Security Circulation Area

Central Lobby

The 3,104-square-foot hexagonal lobby is the central traffic point for departing and arriving passengers and meeters and greeters. It consists of a two-story-high structure, which was part of the original terminal built in 1967. The City of Palm Springs designated in March 2009, the west façade and lobby structure a local historical monument.

Ticketing Lobby

The 10,839-square-foot ticketing lobby is located in the south wing of the terminal processor. Departing passengers check-in their baggage and obtain their boarding passes in the ticketing lobby. The lobby dimensions are 326 feet long by 38 feet wide. The width of the lobby, measured from the back wall behind the counters to the curbside wall, is substandard for the width required for a Level of Service B, as outlined by the International Air Transport Associations (IATA).

The Airport utilizes a frontal type check-in counter system with linearly aligned ticket counters served by ticket agents. The lobby area includes room for passenger queuing and circulation that extends to the building façade.

At PSP, the check-in counter includes a total of 48 agent positions, plus 12 self-service ticket kiosks integrated into the ticketing line. Alaska Airlines has 1 additional remote kiosk located in the ticketing lobby. Current use of ticket counters is described in **Table 2-13.**

Table 2-13: Airline Ticket Counter Positions

Airline	Traditional Positions	Self Service Kiosks
Alaska Airlines / Horizon Airlines	9	4 + 1 remote
Allegiant Air	2	0
American Airlines	6	2
Delta Connection / Northwest Airlines (seasonal)	8	4
Sun Country (seasonal)	4	0
United Airlines (seasonal) / United Express	6	2
US Airways Express	3	0
WestJet (seasonal)	6	0
Unoccupied	4	0
Total Area	**48**	**12 + 1 remote**

Source: GPA Architects

Additional check-in options for passengers on Alaska / Horizon, American and WestJet include a fee-based skycap service located at the terminal curbfront. The remaining airlines do not offer curbside check-in services. The narrow width of the ticketing lobby results in insufficient queue space in front of the counters, causing conflicts between overlapping queues. The circulation space between queuing areas and the exterior terminal wall is constrained and creates movement problems for passengers moving from the south end of the ticketing lobby to the central lobby.

Unique check-in conditions at the Airport include the large number of golf bags, due to the Palm Springs region's high number of golf courses, and a higher than average of mobility challenged and elderly passengers.

Baggage Claim / Rental Car Reservation Lobby

Located between the rental car customer service counters and the baggage claim devices, a 6,882-square-foot area is used for the baggage claim wait area, rental car customer service queue lines, and general passenger circulation area. Serving multiple uses, this lobby does become very congested during peak times and passenger circulation is reduced to a minimum.

Inbound Baggage and Baggage Claim Area

The baggage claim area is located in the north wing of the terminal processor. Passengers arriving at the Airport retrieve their bags at one of the 3 baggage claim units. Electronic baggage information display systems (BIDS) located at each claim device provides information for arriving passengers regarding the baggage claim unit to which their baggage will be delivered.

The flatbed claim devices are fed from the inbound baggage carts outside of the exterior airside wall of the baggage claim area. Beyond the exterior wall of the baggage claim area, the open air bag belt devices are currently spaced close to each other. The distances between baggage carousels 1 and 2 and between baggage carousels 2 and 3 are 8 feet - 9 inches and 11 feet, respectively. This limited spacing between baggage carousels outside where baggage are placed onto bag belts from arriving aircraft presents a problem for airline personnel when unloading bag carts simultaneously. Because PSP attracts a high percentage of leisure travel, there is a higher than normal amount of golf bags and this adds additional handling challenges and magnifies peak congestion issues.

An additional operational inefficiency for airlines is current procedure used to prevent unscreened baggage from entering the secure side of the Airport. This adds additional labor costs to the airlines. Currently, for security reasons, a baggage handler from an airline utilizing a bag belt has to remain near the conveyor door until the last bag has been removed from the claim device. Once the last bag has been removed from the claim device, the handler will turn off the device to prevent unchecked baggage from entering back into the secure side of the airport and manually move any remaining bags to other side.

Other functions occupying the baggage claim area include the rental car reservation counters, rental car provider offices, portable luggage carts, airline baggage office, and public restrooms. Based on interviews conducted with airline and rental car personnel, the baggage claim area is congested during peak hours in the peak season. Based on observations during peak periods, the baggage claim devices have insufficient linear frontage to accommodate current demand. The frontages are 204 feet, 248 feet and 221 feet for baggage carousels 1, 2, and 3, respectively. The approximately 510-square foot baggage claim office located at the southern end of the baggage claim area is also insufficient in size.

Rental Car Customer Service Area

Palm Springs International Airport has seven rental car providers (Advantage, Enterprise, Avis, National/Alamo, Dollar/Thrifty, Hertz, and Budget).

Rental car customer service counters and back offices are located in the baggage claim area. For passengers picking up their rental cars, the short walking distance from the rental car reservation counter to the ready lot is convenient. However, for passengers returning their rental cars in the north end of this same lot, the distance to the airline ticketing counters in the south wing of the terminal processor is less convenient. The total walking distance from the point passengers return their rental cars to the airline ticketing counters is approximately 1,029 feet. The suggested IATA walk time is approximately 984 feet. Furthermore, the path made is heavily congested as there are convergent streams of traffic, especially during peak times. For example, the area designated as the baggage claim / rental car reservation lobby serves multiple purposes - for departing passengers coming in from the rental car return lot to return their cars and then to the ticketing counters in the south wing of the terminal processor, arriving passengers heading proceeding to the rental car reservation counters and then to the rental car ready lot, from arriving passengers waiting for their bags, and from meeters and greeters. Further constraining the building are the support columns in the middle of the main circulation space.

United Service Operations Offices

The Airport has a 1,200 square feet (40 feet by 30 feet) United Service Operations (USO) office for United States military personnel located at the northwest corner of the baggage claim and rental car reservation areas.

Airline Operations

Airline Ticketing Offices (ATO)

Airline ticket offices traditionally include space to support the day-to-day specific administrative and customer service functions. At PSP the ATOs are located behind the lobby enclosure wall and are not accessible to the general public. The ATOs are separated from the ticket lobby by a one-hour fire exposure rated wall and have controlled security access.

Outbound Baggage Screening and Make-up Areas

The outbound baggage handling system consists of both common-use and dedicated take-off belts conveying the baggage to a decentralized explosive detection system (EDS). Five (5) CTX machines and Explosives Trace Detection (ETD) tables for detection tracing of alarmed bags serve all airlines. The airlines utilizing the CTX machines are as follows.

- Alaska Airlines (connected to an in-line system with one belt feeding a dedicated CTX machine)
- Alaska Airlines / USAirways Express / Northwest Airlines (shared)
- WestJet / Allegiant / Northwest (shared).
- Delta Connection / United / United Express (shared)
- American Airlines

Since the introduction of baggage screening following 9/11, the outbound baggage make-up area has lost a considerable amount of floor area. The airlines have continued to successfully manage their conveyor-to-tug bag handling operations in a more confined space.

Concessions / Concessions Storage (Pre Security)

A food concession and another news and gift shop concession are located in the pre-security or non-secure area of the central lobby. The food concession is a full-service, sit down restaurant (Celebrity Bistro). The other concession sells retail snacks , named gifts, and periodicals. HMS Host provides management and staffing services for the Airport's concessions along with Paradies Shops, both which are nationally recognized and in many other airports.

Transportation Security Administration (TSA) Security Screening Checkpoint (SSCP)

The security screening checkpoint (SSCP) is accessible from the central lobby. Following the check-in process, passengers proceed to the SSCP located at the east side of the central lobby for mandatory screening by the Transportation Security Administration (TSA). The SSCP was recently enlarged to provide more queuing space and screening lanes in order to meet current TSA passenger screening guidelines. The facility now has 6 screening lanes, including a priority lane, and 3 search corrals. Each screening lane is equipped with an x-ray bag belt and shares a walk through metal detector with the adjacent bag belt.

The dimensions of the expanded facility are 98 feet long by 56 feet wide. While the length of the facility appears to be adequate, the depths of the facility may not be optimum. The distance between the divestiture tables, where passengers depose of items to be x-rayed, and the wall is approximately 9.5 feet apart. TSA staff conveyed their concerns that this area is constrained during peak times.

Airport Administration and Operations

The Airport's administrative offices are located on the mezzanine level of the terminal processor and accessible via stairs and an elevator from the lobby. The administration area provides both enclosed offices and open work space for airport staff. A conference room provides meeting space for a variety of uses and functions. In case of an emergency, this room also serves as the media center. Airport operations and police staff have offices located on the ground floor of the terminal processor adjacent to the security screening checkpoint. The operations space was originally designed for a different function and some interior remodeling could be easily done to improve the control center nature of this space.

Restrooms

The ground level of the main terminal processor has a total of two public restrooms (one for men and one for women). There are two separate non-public restrooms used by TSA and operations staff. The mezzanine level (shown on Figure 2-12), which consists of Airport administration and operations areas, has a total of two quasi-public restrooms (one for men and one for women). Restrooms located in the terminal concourses are described in Sections 2.10-3 and 2.10-4.

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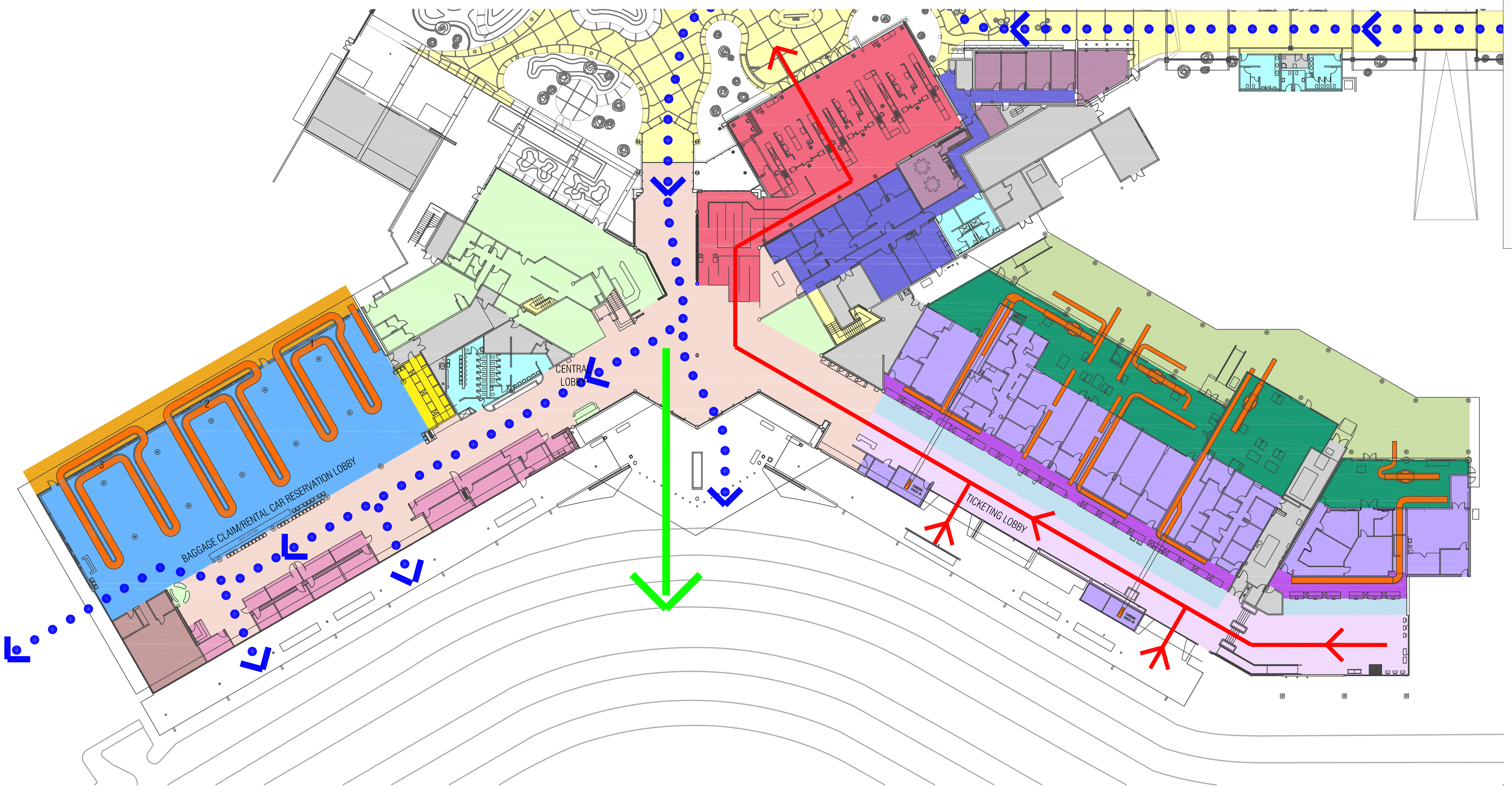

Legend

- 🟪 Airline Ticket Offices
- 🟪 Ticket Counters
- 🟦 Ticket Counter Queueing
- 🟪 Ticket Counter Circulation Areas
- 🟫 Pre Security Circulation Areas
- 🟨 Post Security Circulation Areas
- 🟦 Restrooms
- 🟩 Concession / Concession Storage
- 🟥 Rental Car Reservation Counters
- 🟦 Baggage Claim
- 🟨 Baggage Service Office
- 🟦 PSP Operations
- 🟩 PSP Administration
- 🟥 SSCP
- ⬜ Utilities & Building Maintenance
- 🟪 TSA Offices
- 🟩 Outbound Baggage
- 🟧 Inbound Baggage
- 🟫 USO
- 🟩 EDS
- 🟪 CBP
- ⟋ Baggage Conveyor
- ⛉ Gate

Terminal Processor - Ground Level

Figure 2-13

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT

2.10-3 Bono Concourse

The Bono concourse is shown in **Figure 2-14**. With its unique sweeping fabric roof and pavilion type configuration this concourse is the architectural signature of the Airport. The Concourse is characterized by the following levels and function areas:

- Landscaped Level (shown on **Figure 2-12**)
- Ground Level
  - Utilities & Building Maintenance
  - Ground Support Equipment Parking / Staging
  - Airport Maintenance and Operations Offices
  - Airline Operations Area
  - Concessions Storage Areas
- Second Level
  - Post Security Circulation Areas
  - Concessions / Concession Storage (Post Security)
  - Restrooms
  - Airline Holdrooms
  - Open Courtyard

Landscaped Plaza

A unique landscaped plaza bridges the terminal processor to the Bono Concourse and the Regional Concourse. The plaza features landscaping, both softscape and hardscape, flight information and recently added food and advertising concessions, and bathrooms. This plaza adds to the unique, relaxing, and open air environment of the Airport

Ground Level

The ground level provides space for airline operations, Ground Support Equipment (GSE) parking, Airport maintenance and storage, concessions storage and mechanical / electrical rooms. The mechanical rooms contain chillers, boilers and air handlers. An underpass connects the north and south aprons.

Second Level

After the Security Screening Checkpoint (SSCP) area and the landscaped plaza, passengers ascend on either an escalator, steps, or elevator to the second level. Air-conditioned holdrooms are clustered around the open air concourse. Palm trees in the center of the octagon–shaped concourse are planted under the fabric roof. The fabric roof structure above the concourse provides sun, wind and rain protection. The holdrooms are separated from the open air concourse by glass walls with sliding automatic glass doors. During the hot summer months an evaporative cooling system reduces the ambient air temperature in the concourse, providing temperature relief to the passengers. Passengers aboard aircraft via passenger loading bridges at Gates 4 through 11.

Concessions / Concessionaires (Post Security)

The second level contains seating areas and concessions spaces. Various concessions are located on the second level including Desert Market Place, 12th Fairway Grille, PGA Tour Shop, and EVA's of Palm Springs gift item kiosks.

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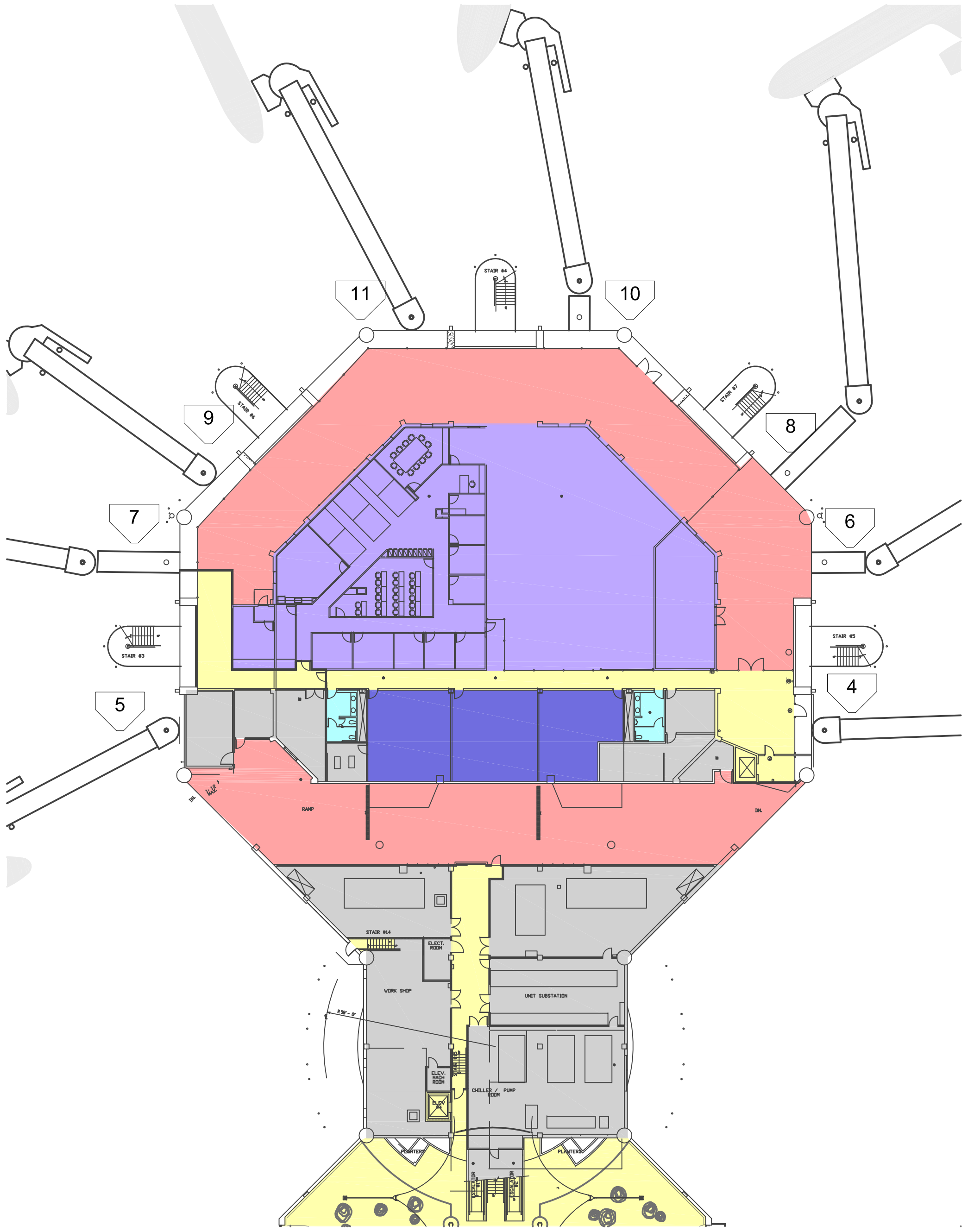
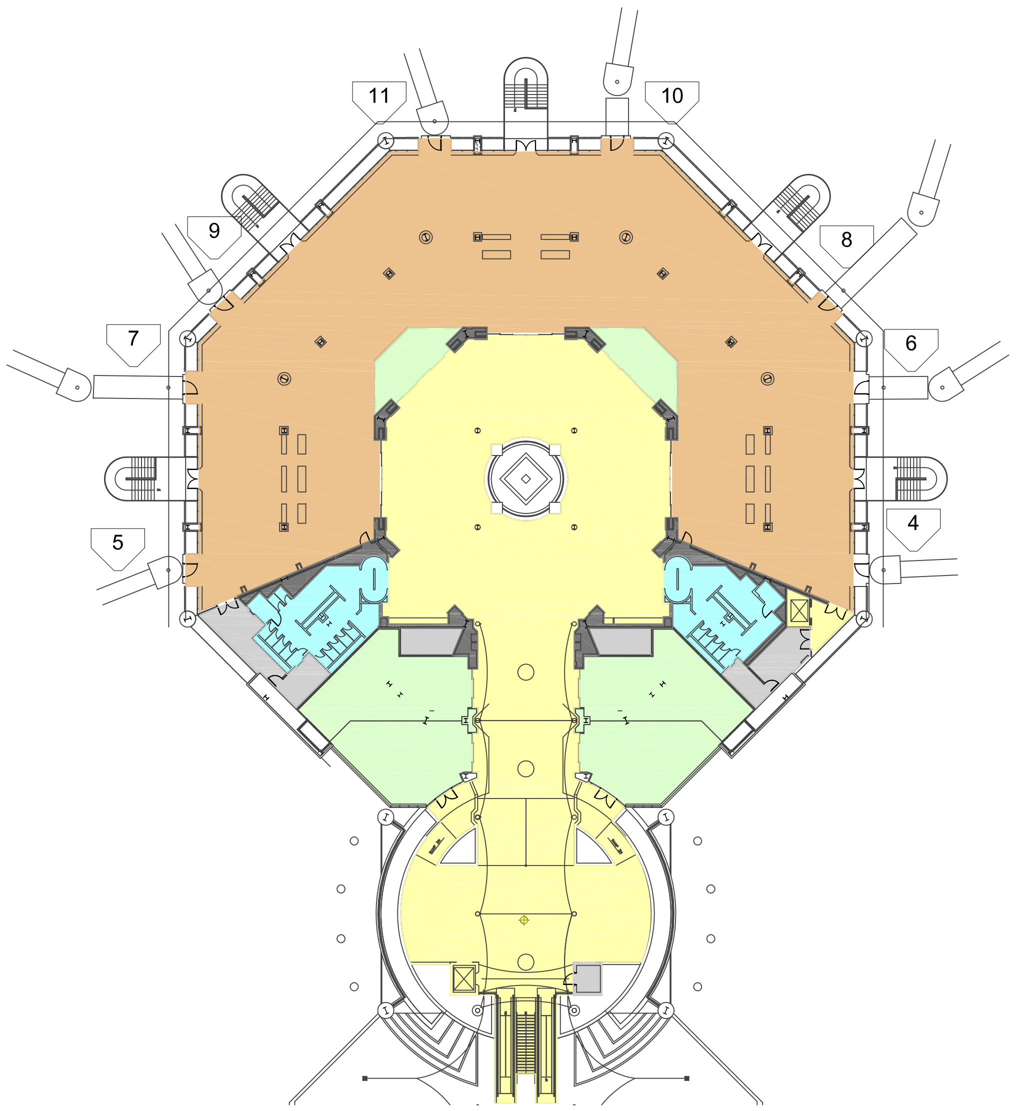


① Ground Level



② Second Level

Legend

- 🟪 Airline Ticket Offices
- 🟪 Ticket Counters
- 🟦 Ticket Counter Queueing
- ⬜ Ticket Counter Circulation Areas
- 🟧 Pre Security Circulation Areas
- 🟨 Post Security Circulation Areas
- 🟦 Restrooms
- 🟩 Concession / Concession Storage
- 🟪 Rental Car Reservation Counters
- 🟦 Baggage Claim
- 🟨 Baggage Service Office
- 🟦 PSP Operations
- 🟩 PSP Administration
- 🟥 SSCP
- ⬜ Utilities & Building Maintenance
- 🟪 TSA Offices
- 🟩 Outbound Baggage
- 🟧 Inbound Baggage
- 🟫 USO
- 🟩 EDS
- 🟪 CBP
- ╱ Baggage Conveyor
- XX Gate

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PALM SPRINGS INTERNATIONAL AIRPORT

Bono Concourse

Figure 2-14

Palm Springs International Airport
Master Plan

2.10-4 Regional Concourse

A new Regional Concourse was completed in Fall 2007. The Regional Concourse is characterized by the following levels and function areas:

- Regional Concourse Walkway
- Regional Concourse
    - Concessions / Concession Storage (Post Security)
    - Restrooms
    - Holdrooms

Regional Concourse Walkway

An open landscaped walkway connects the landscaped plaza to the enclosed Regional Concourse, located on the south side of the terminal complex. From the walkway, passengers have a view of the apron. Two public restrooms are located along the walkway. Construction of new fabric roof modules for sun, wind, and rain protection between the main terminal and regional concourse was completed in the Summer of 2009. Outdoor advertising concessions were also installed and blended into the landscape along the walkway.

Regional Concourse

The 20,000 square-foot single-level enclosed Regional Concourse, shown on **Figure 2-15**, accommodates aircraft parking for 7 regional jets plus one turbo prop. All the aircraft parking positions are ground loaded and passengers aboard aircraft via stairs and ramps. Concession spaces include a new gift shop and a restaurant / bar that opened in the Fall of 2009. Two public restrooms are located in the Regional Concourse. Each of the 8 gates within the Regional Concourse has a holdroom area.

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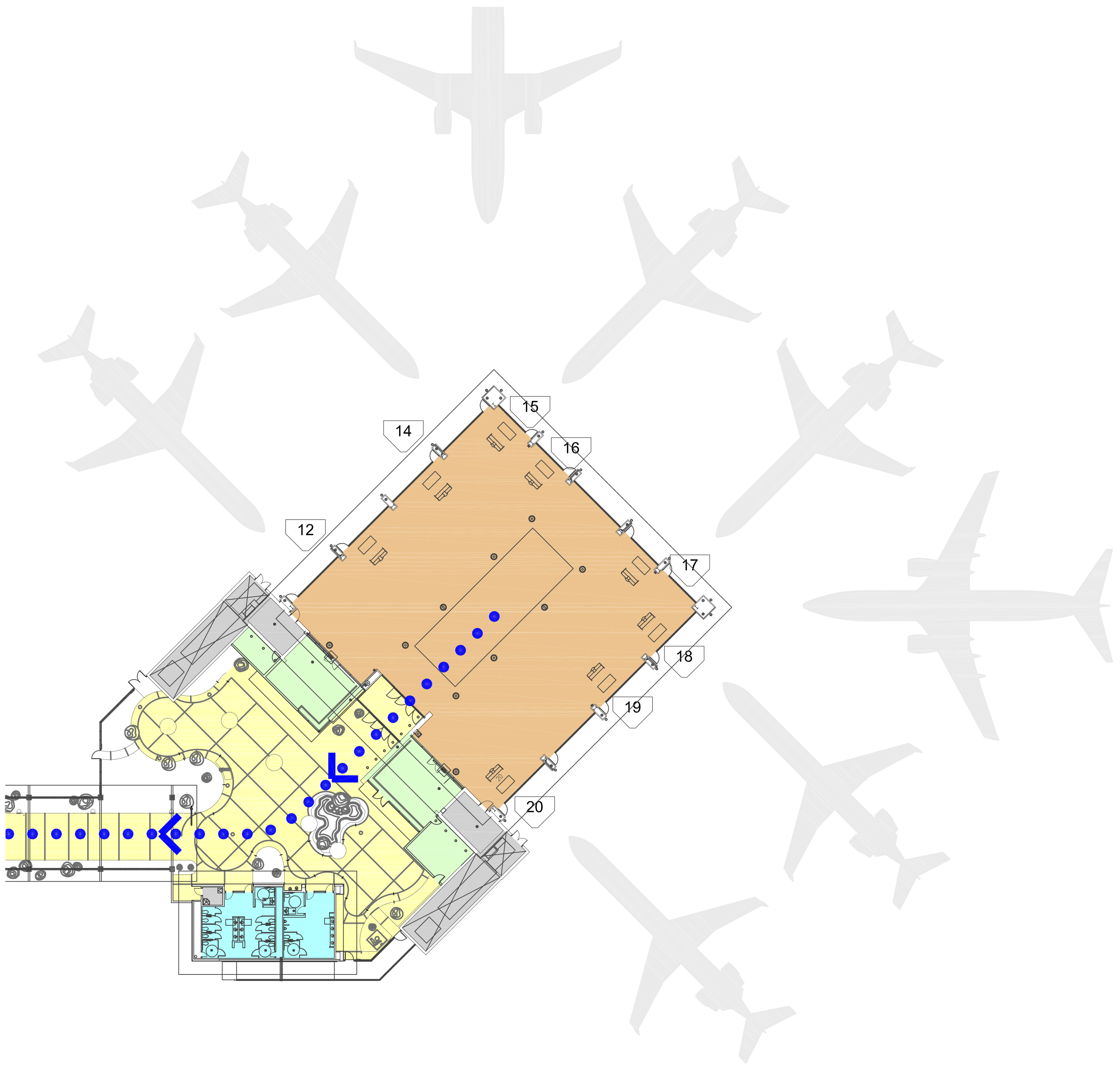

Legend

- 🟪 Airline Ticket Offices
- 🟪 Ticket Counters
- 🟦 Ticket Counter Queueing
- 🟪 Ticket Counter Circulation Areas
- 🟧 Pre Security Circulation Areas
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- 🟩 PSP Administration
- 🟥 SSCP
- ⬜ Utilities & Building Maintenance
- 🟪 TSA Offices
- 🟩 Outbound Baggage
- 🟧 Inbound Baggage
- 🟫 USO
- 🟩 EDS
- 🟪 CBP
- ⟋ Baggage Conveyor
- XX Gate

PALM SPRINGS INTERNATIONAL AIRPORT

N

0 60'

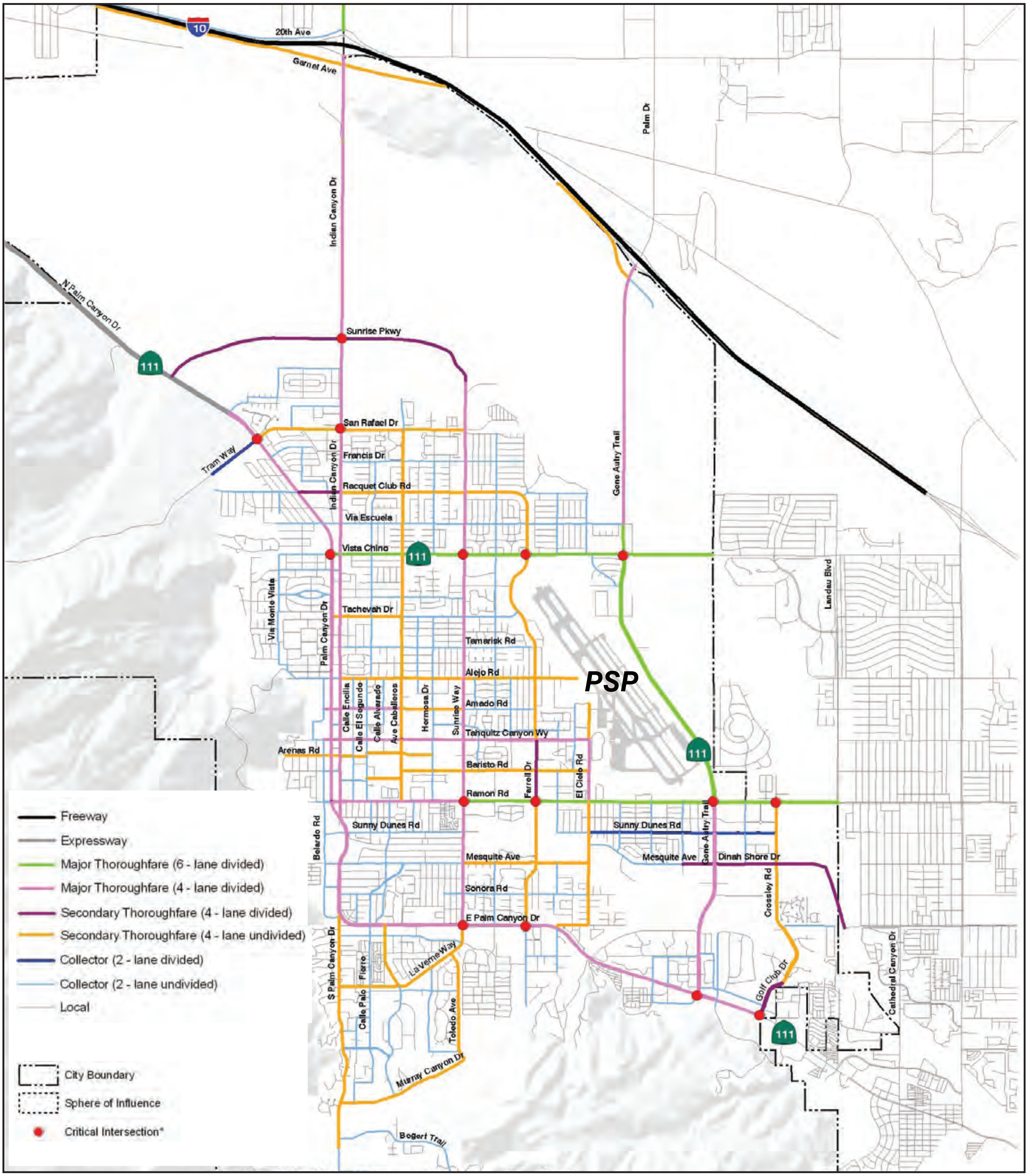
Regional Concourse

Figure 2-15

Palm Springs International Airport
Master Plan

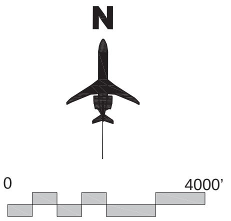
2.11 GROUND TRANSPORTATION / PARKING / ACCESS

The physical layout and characteristics of ground transportation facilities and services at Palm Springs International Airport are illustrated in **Figure 2-16** and described in this section. Described are the off-airport access system, on-airport access system and circulation roads, parking facilities, rental car facilities, and chartered and other ground transportation facilities.



Source: City of Palm Springs General Plan

Note: PSP = Palm Springs International Airport



Regional Roadway Network

Figure 2-16

PALM SPRINGS INTERNATIONAL AIRPORT

Palm Springs International Airport
Master Plan

2.11-1 Off-Airport Access System

Vehicular Access

Palm Springs International Airport is located approximately 5 miles south of the I-10 and accessible by vehicle from all directions via the CA-111 and I-10. Access to the Airport terminal building from the northwest along CA-111 is provided via East Tahquitz Canyon Way or East Vista Chino and North Farrell Drive. Access from the north off the I-10 is provided via North Gene Autry Trail, East Ramon Road, and Kirk Douglas Way. Access from the southwest is provided either via the CA-111 to South Gene Autry Trail, East Ramon Road, and Kirk Douglas Way or off the I-10 along East Ramon Road and Kirk Douglas Way.

Transit Access

Bus transit access to the Airport is provided by the SunLine Transit Agency, which provides bus services for the entire Coachella Valley. Currently, SunLine Transit Agency provides a direct transit stop to the Airport via SunBus Line 24 starting at the intersection of North Palm Canyon Drive and West Stevens Road. Passengers are dropped off and picked up in front of City Hall. The SunBus is equipped with bike racks to accommodate passengers traveling with a bicycle. Also located in front of City Hall on East Tahquitz Canyon Way is the Amtrak Palm Springs Thruway bus stop. The Amtrak bus provides connections to the North Palm Springs Amtrak train station, located on North Indian Canyon Drive near the I-10, and to the destinations served by Amtrak nationwide.

2.11-2 On-Airport Access and Circulation Roads

Terminal access is provided from the downtown Palm Springs area via East Tahquitz Canyon Way and from the I-10, CA-111 and cities in southern Coachella Valley (“Resort Cities”) via Kirk Douglas Way. The counter-clockwise-flow, one-way loop road, called East Tahquitz Canyon Way, serves the parking facilities, terminal curbfront and recirculation access to the Airport.

Airport Access

From East Tahquitz Canyon Road, vehicles enter a two-lane Airport loop road where access is provided to the short term parking lot. Just before the first turn in the loop, the two lanes divide. The left lane is designated for small (private and commercial) vehicles and the right lane for oversized (e.g. charter buses, delivery and cargo) vehicles and other commercial vehicles (e.g. taxis, charter shuttle, and limos) that access the taxi / bus staging lot south of the Airport. Both lanes are directed to the terminal curbfront. However, the lane for oversized and commercial vehicles is routed towards Kirk Douglas Way where vehicles make a U-turn back towards the terminal loop road. Oversized vehicles and other commercial vehicles can also enter onto Kirk Douglas Way via a one-lane road from the intersection of East Baristo Road and South El Cielo Road. From Kirk Douglas Way, oversized vehicles and other commercial vehicles can enter the taxi / bus staging area or make a the U-turn return trip to the terminal on Kirk Douglas Way located opposite the cargo vehicle exit.

Prior to entering the terminal curbfront area, all vehicles are directed through the 6-lane vehicle inspection plaza. The two lanes on the far right closest to the terminal building are used by oversized vehicles strategically routed to enter the terminal curbfront area from Kirk Douglas Way. The four lanes furthest from the terminal building are used by small vehicles coming from both Kirk Douglas Way and East Tahquitz Canyon Way. The vehicle inspection plaza has security features that have the ability to limit direct vehicular access to the terminals in the event of a heightened security levels and to slow and inspect traffic as necessary. The entrance to the long term parking lot is located just after the vehicle inspection plaza.

Terminal Curbfront

The 750-foot long terminal curbfront consists of a three-lane passenger terminal / inner curb and a three-lane commercial / outer curb separated by a median. The inner curb is used primarily by small private vehicles for loading and unloading with the exception of some commercial vehicles. For example, large charter buses use the inner curb for loading and unloading of passengers. Passenger unloading for large charter buses occurs at the curbside on the south end of the ticketing area. Passenger loading for large charter buses occurs in the space adjacent to the rental car lot at the far end of the terminal curbfront at the north end of the baggage claim area. The curbfront is slightly wider than the other two lanes in the inner curb and provides space allocated for approximately 16 private vehicles at one time. The inner curbfront also provides several parking spaces for Airport police and operations vehicle that can be left unattended. The two outermost lanes in the inner curb are designated as pass-through lanes.

The 750-foot long commercial / outer curb is used primarily for delivery and commercial vehicles. Delivery vehicles may park unattended at the innermost and outermost lanes of the outer curb. These delivery vehicles take up a large amount of space in the unattended area and create congestion in the outer curb during peak times as commercial vehicles wait for delivery vehicles to maneuver into the parking spots. Airport operations vehicles (unattended and attended) and commercial service vehicles (attended), excluding taxis, are designated to park in the innermost and outermost lanes. Taxi and courtesy shuttles are designated to park in the inner lane just across from the baggage claim area of the terminal. The outer curb has space at both the innermost and outermost lanes for approximately 10 private and 12 commercial (e.g. taxi, bus, and limousine) vehicles. The middle lane is used as the pass-through lane. Five spaces are reserved for taxi cab staging to address peak time demands of passengers walking out of baggage claim.

Airport Egress

Upon exiting on the north end of the terminal, the six-lane Airport loop road (inner and outer curb) is reduced to three lanes. The three-lane inner curb is reduced to two lanes and the three-lane outer curb is reduced to one lane. Shortly after this convergence of terminal traffic from the inner and outer curbs, rental car traffic from the rental car ready / return lot flows into the terminal traffic mix. Vehicles exit the Airport at the intersection of East Tahquitz Canyon Way and South El Cielo Road. A recirculating road is also available for vehicles to return to the terminal curb, exit the Airport via Kirk Douglas Way or enter the short term parking lot.

The Airport loop road was designed to be used for Airport related traffic. However, once Kirk Douglas Way was built to serve as an additional access roadway to the Airport loop road, there was an increase in cut-through traffic by drivers of vehicles hoping to bypass traffic congestion on East Ramon Road and S El Cielo Road. This cut-through traffic adds to congestion of the Airport loop road during peak commute times. Speed humps have been installed to slow Airport and discourage cut-through traffic, but staff reports that non-airport user traffic is still congesting the roadways and causing an additional safety and security impact.

2.11-3 Parking

The only public parking facilities owned by the City of Palm Springs are located on Airport property. Airport public parking facilities at PSP are managed by a parking management firm and include two short-term and two long-term lots. The public parking facilities are shown on **Figure 2-17**. Parking rates are $1.00 for every 20 minutes with a maximum of $12 and $8 per day in the short-term and long-term lots respectively.

Public Parking Facilities

The short-term parking lot, which accommodates 377 parking stalls (including 12 handicapped stalls), has two entrances; the first located near the beginning of the terminal curb. The second entrance to the short-term parking lot is located near the north end of the terminal curb. The long-term parking lot's sole entrance is accessed via the Airport loop road just after the vehicle inspection plaza before the south end of the terminal curb. Currently, users who park in the short-term parking lot have the ability to access the long-term lot if parking is unavailable in the short-term lot. However, with the use of barriers, it is not possible for long-term parking lot users to park in the short-term lot. Approximately 538 parking stalls (including 10 handicapped stalls) are available for long-term lot users. The short-term and long-term lots share a common vehicle egress plaza with three pay exit booths. Upon exiting the parking lot, drivers can exit the Airport only to the north via the Airport loop road towards the intersection of South El Cielo Road and Gary Kitchen Way. From here, drivers can access local areas via South El Cielo Road. Drivers can also exit back to the Airport by following the Airport loop road or exit to other resort cities via Kirk Douglas Way.

The short term lot is typically 30 to 50 percent occupied at capacity during any given time of the year. The long term lot can get up to 70+ percent of capacity during the peak season. During the holiday peak season, it is necessary to open an over-flow parking lot on the former site of Taxiway J. Approximately 11 acres of land is used for holiday economy parking and can accommodate approximately 1,000 vehicles. This holiday economy parking lot is not in operation 24 hours a day nor staffed by a cashier. Instead, passengers are required to prepay for their parking. The Airport also provide a shuttle service to conveniently transport passengers from the holiday economy lot to the terminal complex, a distance of approximately a half mile. The pavement of the holiday economy lot is in poor condition.

In addition to the short- and long-term parking lots, Airport users can stage with their vehicles temporarily for free in the cell phone parking lot. The cell phone parking lot, located adjacent to the main terminal roadway about 200 feet to the south, provides short-term parking for arriving passengers to call meeters and greeters when they are ready to be picked up from the Airport. The cell phone lot helps reduce congestion, minimizes the number of vehicles at the terminal curb front, and reduces vehicular emissions from vehicles circling the terminal loop.

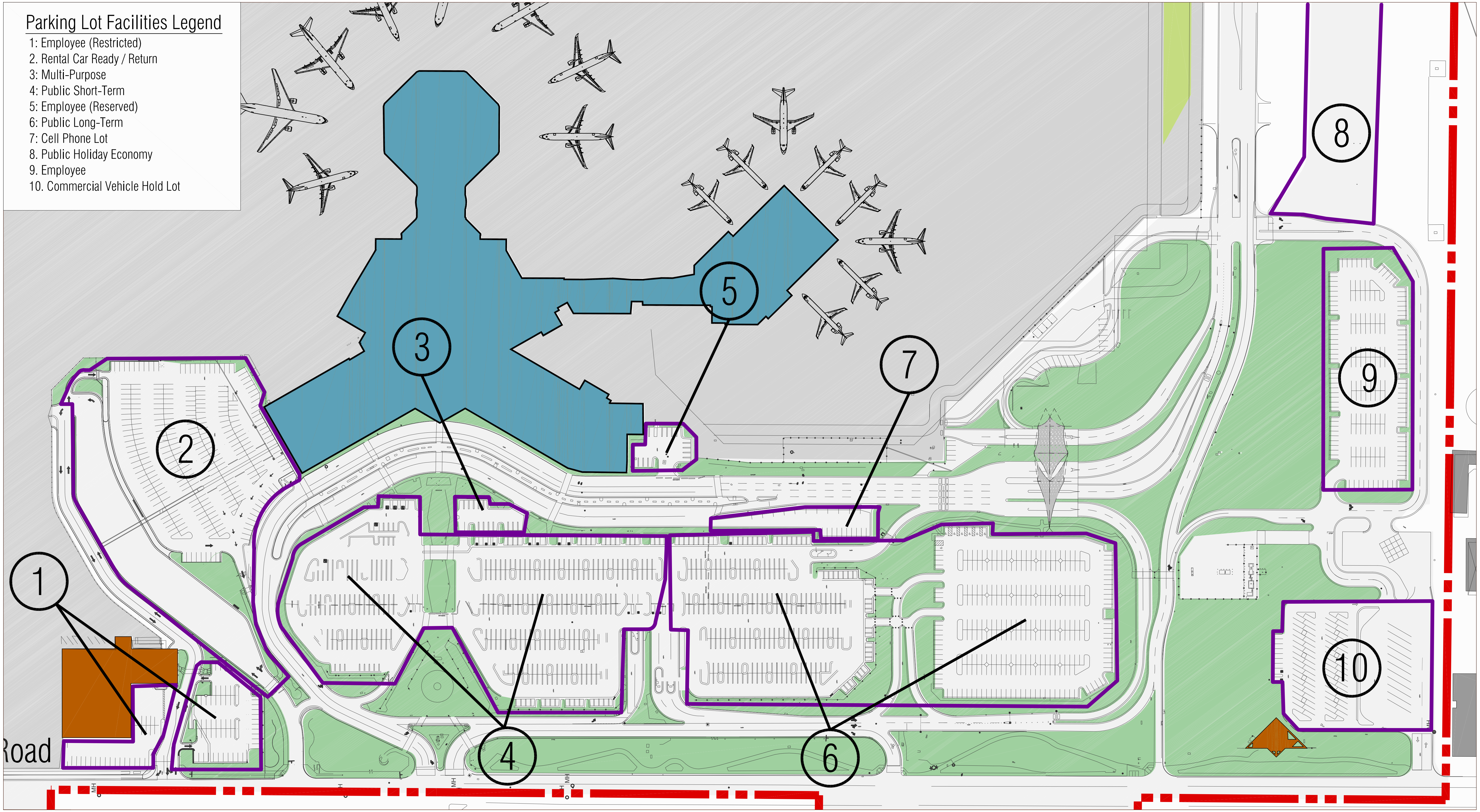
Private Parking Facilities

The Airport also has an employee parking lot located southeast of the long-term parking lot. The employee parking lot is located approximately 1,500 feet from the terminal and has 176 parking stalls. A smaller employee parking lot with 16 stalls is located just south of the terminal building. The Airport also has a small multi- use lot with 17 stalls located in front of the terminal and motorcycle parking is located in Section D of the long-term parking lot.

Table 2-14: Parking Supply

Parking Lot	Stall Count
Short-Term (A and B)	377 (includes 12 handicapped stalls)
Long-Term (C and D)	538 (includes 10 handicapped stalls)
Cell Phone	21
Holiday Economy (during peak season only)	~1,000 (11 acres)
Total Public Parking	**933 (1,933 including holiday economy)**
Mixed Use	17
Employee Parking (Terminal)	16
Employee Parking (Kirk Douglas Way)	176
Total Special / Employee Parking	**209**
Total Parking	**1,142 (2,142 including holiday economy)**

Source: HNTB Analysis



Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

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🟧 On-Airport Facility

⬜ Airport Operations Area

🟦 Passenger Terminal Building

Airport Property Line

Parking Facilities

Figure 2-17

Palm Springs International Airport
Master Plan

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2.11-4 Rental Car Facilities

The following companies provide rental car services at PSP: Advantage, Enterprise, Avis, National/Alamo, Dollar/Thrifty, Hertz, and Budget. The 2009 market shares of the rental car providers are:

On-Airport	**99.1%**
Hertz	27.0%
National / Alamo	18.9%
Avis	12.0%
Budget	14.4%
Enterprise	14.0%
Dollar	8.4%
Thrifty	4.4%
Off-Airport	**0.9%**
Advantage	0.4%
Cross Roads	<0.5%
Go Rentals	0.5%
Luxury	<0.5%

All of these rental car providers utilize the ready / return lot on Airport property with the exception of Enterprise, who has their facility approximately 1 mile away from the Airport and shuttles users back and forth to that facility. The Enterprise facility is located on Airport property near the intersection at Kirk Douglas Way and Ramon Road.

The rental car ready / return lot, with 279 ready stalls and an approximately 164 return stalls, is located just north of the bag claim area. Rental car reservations desks are located within the bag claim area. Rental car customers retrieve their reservation and pick up their keys at the rental car counters and proceed to their designated numbered rental car stall, conveniently located just outside the north door of the baggage claim area. None of the rental car companies have the ability to install typical "preferred members" facilities at the current site. The companies are apportioned preferred locations and ready stalls based on their market share annually. The return stalls and lanes are located between the ready / return lot and the apron which was recently expanded to accommodate more vehicles. Each on-Airport rental car provider has a designated lane for rental car returns. The walking distance from the return lot to the ticketing lobby area is approximately one quarter of a mile. Passengers dropping off their rental car access the airport terminal by way of a five foot wide walkway that connects the return lot with the baggage claim area. This uncovered walkway does become congested with opposing foot traffic during peak times.

Rental car maintenance and service facilities are all located off-site from the ready/return lots, but are still on Airport property. These facilities are shown on **Figure 2-7**. The rental car providers employ staff to drive returned vehicles to the maintenance facility and to drive serviced vehicles back to the ready lot. Most of the maintenance and service facilities are located along North Civic Drive and East Civic Drive. Rental car provider interviews indicated it takes approximately 10 minutes to locate and transfer a car to the terminal ready lot after it has been serviced and approximately 7 minutes to turn a car around at the maintenance facility.

The shuttling of rental cars between the facilities creates operational inefficiencies for the rental car providers. During peak season, upwards of 50 employees are hired solely to drive the rental cars back and forth between the facilities. Based on input from the tenants, the approximately 17- minute round trip drive time also means increased overhead fuel usage. The service facilities are inadequately sized for peak season operations. There is often inadequate space to store the queue of serviced rental cars that can not fit into the allotted ready spaces. Problems also arise with fuel deliveries. Fuel tankers must navigate their way through the maintenance facilities to unload gasoline for the rental car providers. All of this activity occurs right next to a residential area where homeowners consistently voice their discontent with the sound, air and visual pollution being emitted by these operations.

The Airport has an over-flow rental car storage lot located on Airport property north of Alejo Road and west of Taxiway W. Several hundred additional rental cars are transported to PSP at the beginning of peak season to meet the upcoming demand.

2.11-5 Commercial / Chartered Transportation

About a dozen hotels and resorts offer courtesy shuttle services to and from the Airport. Currently three shuttle companies provide services to transport passengers to and from destinations throughout the Coachella Valley. Other chartered transportation includes services for the disabled or seniors, limousine, taxi, and bus service.

The Airport has an advanced automated vehicle inventory system, known as AVI, located out front and at the vehicle inspection plaza. The system automatically logs all taxis and registered commercial vehicles, queues taxis when demand calls for it, and creates a monthly activity report for administration so they can collect user fees. There is only room for approximately 5 taxi curbside queued positions in front of the terminal. A taxi driver lounge and rest area, located west of the employee parking lot, allows drivers to stage and get relief from the heat while waiting for their position in the queue to advance.

Chartered buses drop off passengers in the unloading area in front of the WestJet curbside check-in area. Charter bus staging is also located in the taxi queue lot. During the peak season, there could be 3-6 buses per hour at the staging area for several hours at a time. The charter bus loading area is located near the rental car lot.

All hired livery vehicles pick up and drop-off passengers at the outer curbfront and drop off passengers at the inner curbfront. Hired vehicles are required to have an AVI transponder that automatically records the vehicle operator upon picking up passengers at the Airport. Transponders have a one-time purchase cost and annual fee per transponder. The transponder used at PSP is different than the transponders used at LAX, John Wayne, and ONT. Passengers bound for commercial vehicles must walk across the main private-vehicle circulation loop road.

The commercial / outer curbfront becomes congested at peak times. All delivery vehicles servicing the Airport also make use of the commercial / outer curbfront area thereby making it difficult for livery drivers to find adequate curbside space to pick up and drop off passengers. Furthermore, the placement of the commercial curbfront at the front of the terminal curbside creates congestion for vehicles entering the airport queue up to drop and pick up passengers.

2.11-6 Pedestrian / Bicycle Access

Pedestrian facilities include sidewalks located on South El Cielo Road and at inner terminal curbfront as well as up through the landscaped walkway located directly up to the terminal. Five crosswalks are also located at the terminal curbfront for pedestrians crossing from the parking lots to the terminal. There are concerns that pedestrian walkways be improved for employees accessing the terminal from the employee parking lot located on the south side of the Airport. Bicycle access is currently not offered at the Airport, but is offered throughout the City of Palm Springs.

2.12 AIRLINE / AIRPORT SUPPORT FACILITIES

2.12-1 General Aviation

PSP has two full-service fixed base operators (FBO) on Airport property to provide general aviation services such as aircraft parking, fueling, supplies, towing, maintenance, car rental, catering, and storage for personal and corporate use of aircraft. Atlantic Aviation provides FBO services on the east side of the Airport, and Signature Flight Support provides FBO services northwest of the terminal building. Approximately 116 general aviation aircraft are based at PSP. Both FBOs are affiliated with a nationally recognized corporate network of FBOs.

Atlantic Aviation FBO

Atlantic Aviation (Atlantic), located on the east side of Runway 13L-31R and shown on **Figure 2-18**, represents one of the country's largest networks of fixed base operations. Atlantic Aviation is a full service fixed base operator with 75% of its services provided the corporate business and private jet market and 25% of its services to the leisure and flight training market of general aviation at PSP.

Services that Atlantic Aviation provides include aircraft fueling, jet and AVGAS sales, aircraft hangars, aircraft tie-downs, in-flight catering, courtesy vehicles, executive / exotic / recreational vehicle rental, limousine and taxi services, personal ramp attendants, military fueling, private vehicle owner parking, access to the U.S. Customs and Border Protection facility, a 3,500-square-foot restaurant and vehicle gas station. Additional services that are provided by subtenants within the Atlantic Aviation leasehold are recreational flying, corporate charter, flight training, news reporting, forestry support, agricultural spraying, VIP flights, Civil Air Patrol, law enforcement flights, emergency medical life flights, search and rescue flights, aerial photography, surveying, real estate tours, aerial inspections, and just-in-time shipping services. **Table 2-15** and **Table 2-16** provides a breakdown of the area and fuel capacity, respectively, under Atlantic Aviation's leasehold.

Atlantic Aviation manages thirty T-Hangars, which are 972 square feet each in size and six additional T-Hangars at 1,246 square feet each in size. Atlantic Aviation also operates three conventional hangars. The first hangar is 30,000 square feet in size and the second conventional at 12,500 square feet in size. Atlantic

Aviation's 7,800-square-foot executive terminal provides on-site concierge services, exclusive passenger area, one large executive conference room, Pilot's Lounge, full kitchen, executive office space, showers and a pool.

Table 2-15: Atlantic Aviation FBO Functional Areas

Facility	Area
Ramp	89,400 square yards
Atlantic Terminal	7,800 square feet
Conventional Hangar	32,000 square feet
Conventional Hangar	30,000 square feet
Conventional Hangar	15,000 square feet
T-Hangar	9,900 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
Restaurant	3,500 square feet
Landside	30,400 square yards
Fuel	274,000 square feet
Total Area Leasehold	**28 Acres**

Source: HNTB Analysis

Table 2-16: Atlantic Aviation Fuel Services Inventory

Storage Unit	Capacity (gallons)
Jet A	
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	3,000
Jet A Storage Subtotal	**73,000**
100 Low Lead AVGAS Fuel	
Aboveground Storage Tanks	12,000
Mobile Tanker	1,000
AVGAS Subtotal	13,000
Total Fuel Storage Capacity	**86,000**

Source: HNTB Analysis

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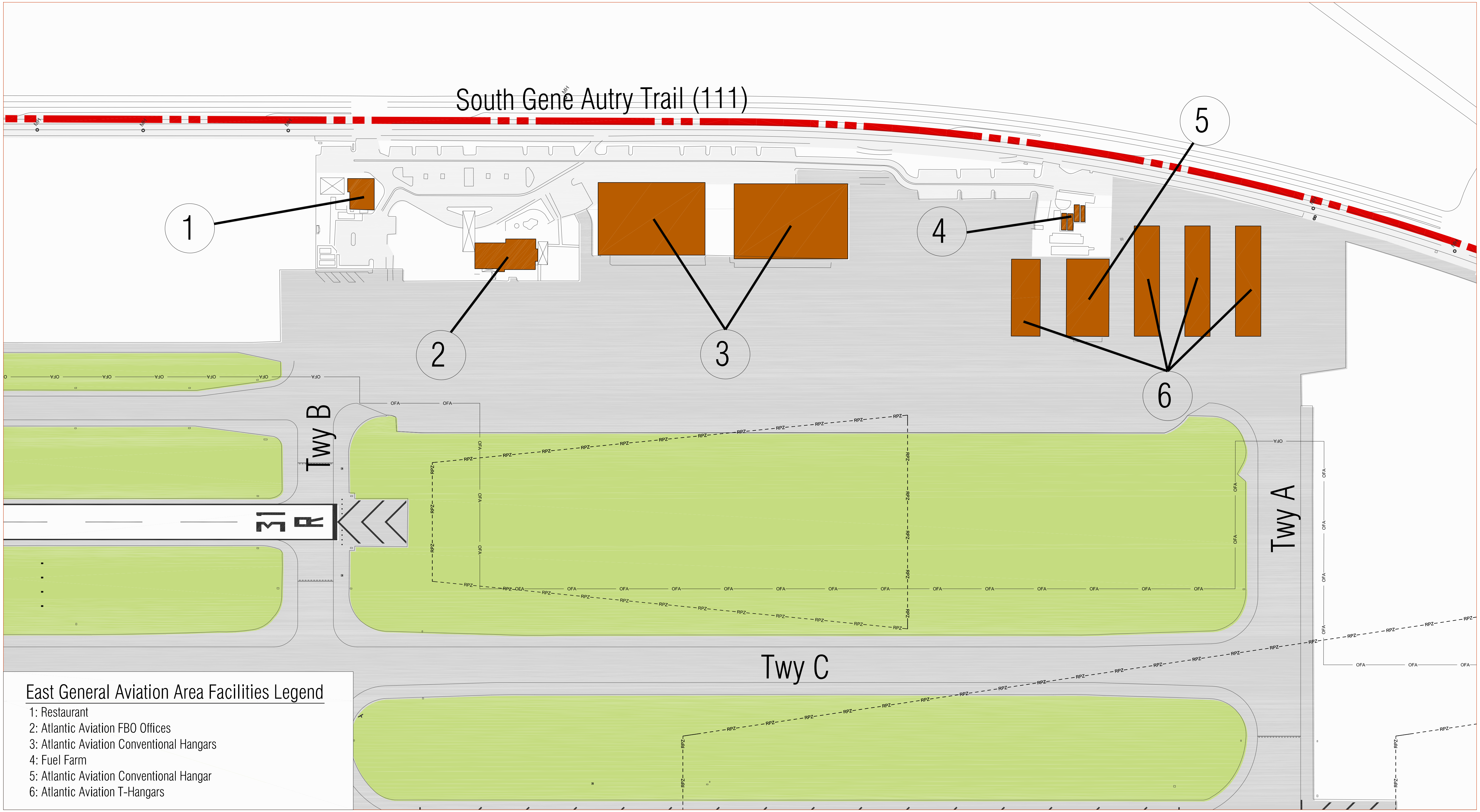


East General Aviation Area Facilities Legend

1: Restaurant
2: Atlantic Aviation FBO Offices
3: Atlantic Aviation Conventional Hangars
4: Fuel Farm
5: Atlantic Aviation Conventional Hangar
6: Atlantic Aviation T-Hangars

Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

0 200'

🟧 On-Airport Facility
▨ Airport Operations Area
—·— Airport Property Line
—OFA— Object Free Area (OFA)
--RPZ-- Runway Protection Zone (RPZ)

East General Aviation Facilities

Figure 2-18

Palm Springs International Airport
Master Plan

Signature Flight Support FBO

Signature Flight Support (Signature), located west of Runway 13R-31L and just north of the passenger terminal, provides a full range of flight support services. Signature FBO, shown on Figure 2-19, offers service to recreational flying, corporate business aviation flights, flight training, law enforcement flights, emergency medical flights, and is a gateway for high profile visitors. Specific flight services include a shared U.S. Customs and Border Protection facility, aircraft tie-downs, jet fuel sales, courtesy vehicles, inflight catering, hangar rental, and car rental. Signature caters largely to the business travel market with an approximate 45% market share of their business. The remainder of Signature's business is made up of a combination of services to all other facets of general aviation.

In early 2008, Signature completed the construction of a new 6,700-square-foot corporate terminal located at 250 N. El Cielo Road. The modern new terminal is equipped with meeting areas, pilots briefing room, showers and a lounge. Table 2-17 provides a breakdown of the area under Signature's leasehold. Signature operates a total of 20 T-hangars and 16 condo hangars. In addition, Signature manages the 24,000-square-foot Desert Springs Hangar and leases the 7,000-square-foot Desert Aeronautics Maintenance hangar as well as a 12,000-square-foot and 10,000 square-foot hangar from the Airport. Signature's leasehold spans 13 parcels and includes approximately 33 acres. Because all these parcels are spread out over a wide area with other airport tenants in-between, it has been challenging for Signature to plan and expand their facilities. Usually FBO's like to keep their operations s close together as possible to allow for more efficient operations. Unfortunately that has not been the case at PSP Airport due to the mixture of different airport tenants, including the main passenger terminal complex right on the south end of the leasehold.

Table 2-17: Signature Flight Support FBO Functional Areas

Facility	Area
Ramp	84,000 square yards
Signature Terminal	6,700 square feet
Condominium Hangar	30,000 square feet
Condominium Hangar	30,000 square feet
Desert Springs Hangar	31,500 square feet
Conventional Hangar	15,000 square feet
Conventional Hangar	10,000 square feet
Conventional Hangar	10,000 square feet
T-Hangar	11,000 square feet
T-Hangar	11,000 square feet
Desert Aero Maintenance Hangar	30,500 square feet
Landside	108,000 square feet
Fuel	10, 00 square feet
Total Area on Leasehold	**33 Acres**

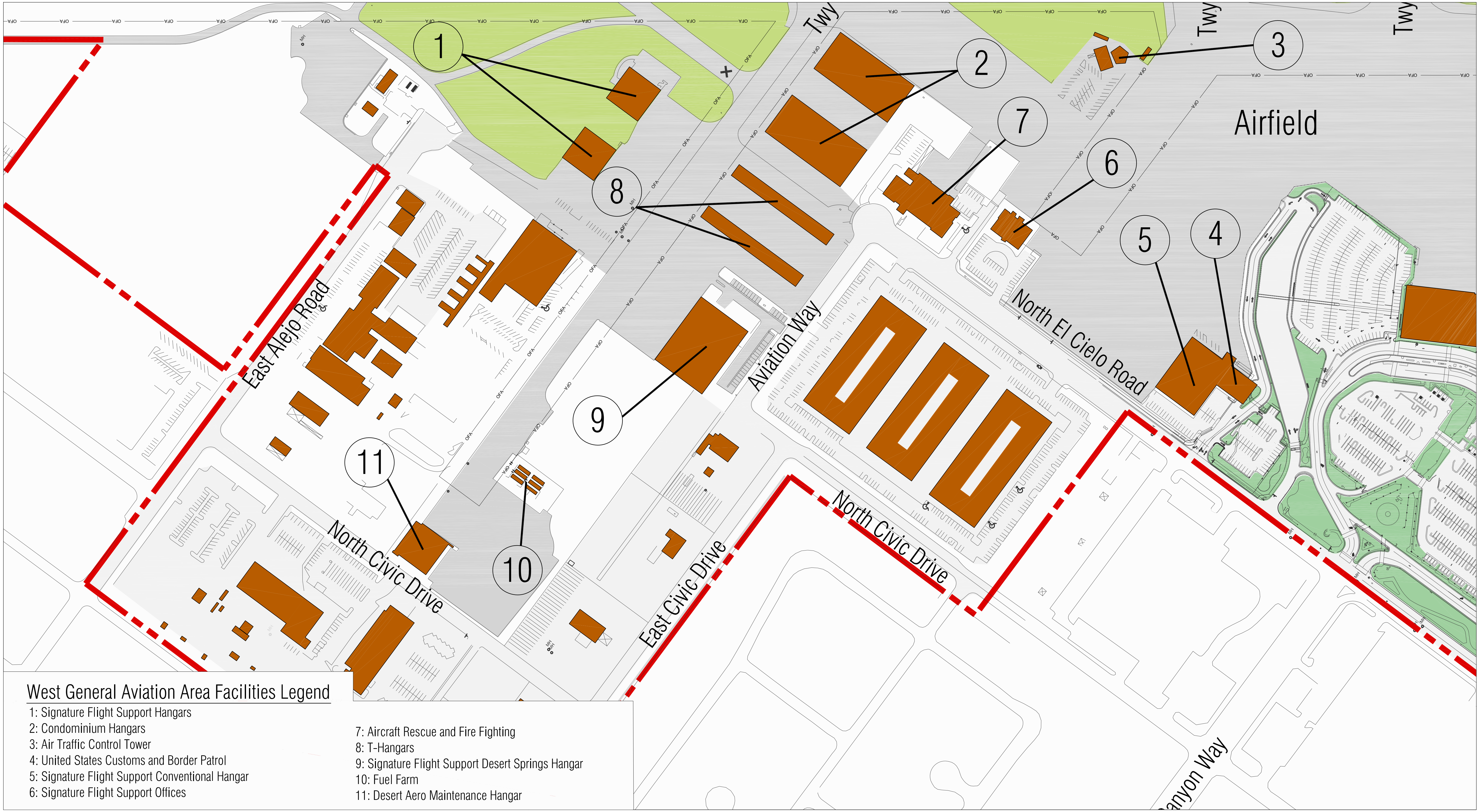
Source: HNTB Analysis

Signature Flight Support has for some time been the contract provider at the Airport for fuel service for air carrier operations. As outlined in **Table 2-18**, Signature maintains five above ground 20,000-gallon Jet A fuel tanks and eight mobile refueling tankers ranging from a capacity range from 7,500 gallons to 10,000 gallons. Airlines establish relationships with their preferred fuel provider, and that provider contracts with Signature to deliver the fuel into plane. In addition to its air carrier refueling business, Signature maintains AVGAS fuel storage in the amount of 13,750 gallons.

Table 2-18: Signature Flight Support Fuel Services Inventory

Storage Unit	Capacity (Gallons)
Jet A Fuel	
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Mobile Tanker	10,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	3,000
Mobile Tanker	7,000
Jet A Storage Subtotal	**135,000**
100 Low Lead AVGAS Fuel (100 LL)	
Aboveground Storage Tanks	12,000
Mobile Tanker	1,000
Mobile Tanker	750
AVGAS Subtotal	**13,750**
Unleaded Gasoline	
Aboveground Storage Tanks	1,000
Off Road Diesel 2	
Aboveground Storage Tanks	1,000
Total Fuel Storage Capacity	**150,750**

Source: Signature Flight Support



West General Aviation Area Facilities Legend

1: Signature Flight Support Hangars
2: Condominium Hangars
3: Air Traffic Control Tower
4: United States Customs and Border Patrol
5: Signature Flight Support Conventional Hangar
6: Signature Flight Support Offices
7: Aircraft Rescue and Fire Fighting
8: T-Hangars
9: Signature Flight Support Desert Springs Hangar
10: Fuel Farm
11: Desert Aero Maintenance Hangar

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Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

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0 250'

🟫 On-Airport Facility
▨ Airport Operations Area
—OFA— Object Free Area (OFA)
—·—·— Airport Property Line

West General Aviation Facilities

Figure 2-19

Palm Springs International Airport
Master Plan

2.12-2 Cargo

Cargo operations at the Airport are handled exclusively via aircraft belly cargo. At the current time, no heavy freight or express cargo carriers operate at PSP. Air freight bound for and from the Coachella Valley is transported by truck to other regional airports in larger population centers that generate substantial air cargo tonnage and justifies having dedicated all-cargo aircraft. LA/Ontario International Airport handles the majority of air cargo for the Riverside County region. This is typical for small cities and airports that are short distances from major metropolitan areas. Because the Coachella Valley relies so heavily on tourism as a prime industry, and the amount of air freight being generated is minimal compared to an airport in an industrial / manufacturing based city, the integrated (air and ground) air cargo carriers find it more efficient and cost effective to move the air freight by ground to/from the aircraft serving the large cities.

2.12-3 Support

Aircraft Rescue and Fire Fighting

In 1975 the current ARFF building was constructed. Measuring 17,615 square feet in size, the ARFF building at PSP was built to act as a dual role facility: as an ARFF facility for the airport and as a Palm Springs city fire station structural unit.

The ARFF is located on the west side of the airport, north of the terminal area and east of the FAA Air Traffic Control Tower. The ARFF station is equipped to handle emergencies (e.g. emergency medical services, fire protection services, fire protection planning, fire prevention, hazardous materials response, and public education) on and off airport. The vehicle bay area holds a combination of structural and ARFF vehicles and has 4 bays that open to the landside on the west side of the building and airside on the east side. In addition to the vehicle bays, the ARFF building houses offices, a control room, dormitories, showers, gym, kitchen/dining room, lounge and firefighting-related maintenance facilities (hoses, breathing apparatuses etc…).

The ARFF facility is a certified 24-hour FAR Part 139 facility. FAR Part 139 is used to determine the aircraft rescue and firefighting Index (A through E) for airports serving certificated air carriers/ commercial service based on the length of the longest aircraft operated by an air carrier performing an average of five scheduled departures per day (computed on an annual basis). Determination of the appropriate amount of ARFF equipment for an airport is based on the airport index. The five ARFF indices are displayed in **Table 2-19** with details of specific requirements to meet each index. PSP satisfies the requirements for ARFF Index C and has the current capacity to handle even higher indices if the airline traffic dictated it.

In 2003, the Airport replaced all three of its ARFF vehicles with modern new units using AIP grant funding. The facility has an Oshkosh STI-3000 quick-attack vehicle carrying 3,000 gallons of water with a mounted “Snozzle” system that allows the vehicle to pierce an aircraft fuselage. In addition to the quick-attack vehicle, the Airport received two new Oshkosh STI-1500 1,500 gallon trucks. A complete inventory of heavy mobile equipment for the ARFF facility can be found in **Table 2-20.**

Table 2-19: ARFF Index Classifications

Airport Index	Required No. of Vehicles	Aircraft Length (feet)	Schedule Daily Departures	Agent Plus Water for Foam
A	1	< 90	> 1	500# Sodium-based DC or Halon 1211 or Clean Agent; or 450# Potassium-based DC plus water to produce 100 gal of AFFF.
		≥ 90, < 126	< 5	
B	1 or 2	≥ 90, < 126	≥ 5	Index A plus 1,500 gal Water
		≥ 126, < 159	< 5	
C	**2 or 3**	**≥ 126, < 159**	**≥ 5**	**Index A plus 3,000 gal Water**
		≥ 159, < 200	**< 5**	
D	3	≥ 159, < 200	≥ 5	Index A plus 4,000 gal Water
		≥ 200	< 5	
E	3	≥ 200	≥ 5	Index A Plus 6,000 gal Water

Source: 14 CFR Part 139

Notes: DC = Dry Chemical; AFFF = Aqueous Film Forming Foam

Table 2-20: ARFF Vehicle Inventory

Quantity	Year of Manufacture	Description
1	2003	Oshkosh STI-3000 ARFF vehicle 420 Gal. Foam, 3000 Water, Snozzle equipped
2	2003	Oshkosh STI-1500 ARFF vehicle 210 Gal. Foam, 1500 Water
1	2005	Emergency Mobile command center (Shared between Fire Dept., Police Dept. and Airport)
1	1999	Conventional Pierce Firetruck Aerial Platform (85 ft)
1	2008	Conventional Pierce Firetruck Ladder (105 ft)
1		Wildland all terrain vehicle, 500 Gal. water with foam
1		Mass casualty module
1		Foam trailer
1		Pickup truck
1		Mobile water supply vehicle, 1,800 Gal.

Source: Palm Springs Fire Department

The City of Palm Springs Fire Department Station 442 provides all primary ARFF services for the Airport. In addition to emergency services (medical, fire protection, fire protection planning, fire prevention, hazardous materials response, and public education[10]), ARFF personnel also participate in daily inspections of the airfield, to allow staff to maintain a high level of familiarity with the complex airfield configuration of runways, taxiways, and ramps. As required by the Federal Aviation Administration (FAA), the department must maintain recurrent training and there is an actual aircraft fuselage on-site for simulating rescue and extinguishing aircraft fires using truck turrets and hand lines..

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[10] City of Palm Springs General Plan, 2007

In alert situations that present a high magnitude of exposure, mutual aid services are called in to assist the ARFF Division. Landside and structural fire responses are also provided by station 442. With its access to AOA and to the landside, the facility is uniquely positioned to assist in all emergencies at PSP. There is also a separate building, which is scheduled for replacement in 2010, that serves for ARFF initial and recurrent classroom training.

Safety and Security

The Palm Springs Police Department provides the law enforcement support to PSP. These law enforcement officers are responsible for patrolling the Airport, responding to security screening alerts, traffic accidents, traffic control, security patrols, investigating crimes which occur on airport property and serve as a deterrent to criminal activity or harm to property. In addition, the Police Department's Airport Detail has a canine unit for explosives detection.

U.S. Customs and Border Protection

U.S. Customs and Border Protection maintains a one-agent staffed general aviation aircraft clearance operation that is on-call 24 hours a day at Palm Springs International Airport and requires a minimum advanced notice of four hours. The facility is located in the same building that Signature Flight Support FBO used to occupy. The 5,434 square-foot facility has the capability of handling aircraft with a maximum of 15 passengers and crew. Arriving international aircraft taxi to the ramp in front of the Customs facility and an officer will instruct the passengers to deplane and enter the facility for appropriate INS processing and handling.

The offices used by U.S. Customs are owned and maintained by the airport as stipulated in an agreement. The Airport Department is also responsible for reimbursing the federal government for all expenses associated with staffing the operation. The Airport then charges a User Fee to the aircraft that call for the service and that fee is collected by the FBOs. The operation is not designed or intended to handle international airline flight. That would require a completely separate terminal and staffing to satisfy the Federal Government’s standards, including being designated a port of entry eligible for accepting and clearing international commercial airline service. PSP Airport’s Canadian airline inbound flights are pre-cleared in Canada prior to entering the United States.

FAA Air Traffic Control Tower

The Air Traffic Control Tower (ATCT) is located west of Taxiway W between Taxiways G and W-3 on the west side of the airfield. The facility used to house both the ATCT and Terminal Radar Approach Control (TRACON) until 2007 when TRACON functions were consolidated to the Southern California TRACON center in San Diego. A new $24 million ATCT to replace the existing facility is expected to come online in 2014. The new facility will stand approximately 156 feet tall and will follow the standard FAA ATCT design protocol. The tower will be located approximately 50 feet to the north of the existing facility.

Airline Maintenance

SkyWest Airlines leases airport property and operates an aircraft maintenance facility east of Runway 13L-31R and north of Atlantic Aviation FBO. The facility sits on an area of 5.62 acres with approximately 50,000 square feet of office and hangar space, 11,630 square yards of ramp, and 90,250 square feet of landside area. The facility provides C-checks for SkyWest's Embraer 120 Brasilia aircraft and overnight checks for SkyWest's CRJ fleet. SkyWest operates the Embraer 120, CRJ 200, CRJ 700, CRJ 700ER, and CRJ 900 LR on behalf of United Express and Delta Connection.

2.12-4 Infrastructure / Utilities

The Airport shares a cogeneration station with the City of Palm Springs, which provides the electricity, air conditioning, and heating for the Airport as well as other city facilities including City Hall and Police Headquarters. Cogeneration involves using a natural gas energy source to produce electricity and steam to meet energy needs. In addition to the co-generation facility, the Airport terminal also has two, 250-ton chillers used to cool terminal facilities during the hot summer months.

Electrical service is provided by Southern California Edison Company (SCE). SCE maintained a distribution capacity of 17,000 megawatts under optimal operating conditions in 1995. The Airport used approximately 23,000 kilowatt hours per day in 1995.

Natural gas service is provided by the Southern California Gas Company (SCG). The Airport uses approximately 50,000 cubic feet of natural gas per day in 1995.

Telephone service is provided by Verizon Communications. Cable service is provided by Time Warner Cable.

Solid waste service is provided by Palm Springs Disposal Services (PSDS). Solid waste is currently disposed of at the Edom Hill landfill in Cathedral City and the Eagle Mountain landfill in eastern Riverside County. As of 1995, solid waste generated from Airport uses approximated 17,000 pounds per day. To minimize solid waste generated at the Airport, the Airport has a recycling policy and program.

Wastewater disposal service is provided by the City of Palm Springs at the City of Palm Springs Wastewater Treatment Facility. As of 1995, the Airport approximated 950,000 gallons of wastewater per day. Sewer lines include leading to the Airport include:

- 15" sewer line located beneath Gene Autry Trail and Ramon Road
- 24" line within the Farrell Drive right-of-way
- 12" line beneath El Cielo Road

Water distribution lines serving the Airport include:

- 12" line located beneath Gene Autry Trail from Ramon Road to Vista Chino and along Ramon Road south of the Airport.

- 12” line located beneath El Cielo to East Tahquitz Canyon Way which becomes an 8” line until Aviation Drive
- 12” line on Farrell Drive west of the Airport
- 9” line beneath Aviation Way and Civic Center Drive
- 12” line located beneath Alejo Road
- 30” line beneath Vista Chino

The Airport is located within the Riverside Flood Control Agency’s Palm Springs Area and has an Airport Storm Drain Master Plan pertaining to storm drainage and flood control.

Chapter 3: Aviation Activity Forecasts

3.1 INTRODUCTION

Activity forecasts are a critical component of the Master Plan. They are instrumental in determining the size and type of facilities that will need to be developed or expanded at PSP over the next twenty years. Separate annual forecasts were developed for scheduled domestic and international passenger, air cargo, air taxi, general aviation, and military activity. Forecasts were prepared for 2013, 2018, 2023, and 2028.

This report first discusses historical and anticipated socioeconomic activity in the Palm Springs area followed by a discussion of historical aviation activity and ongoing trends at PSP. Critical assumptions are then presented followed by the forecasts of domestic and international passengers. Forecasts of air cargo tonnage, air taxi, general aviation and military activity are then discussed. The chapter concludes with a summary of forecast annual activity and alternative forecast scenarios.

The assumptions in the following forecasts are based on input from Airport officials, consultant input, previous PSP studies, relevant literature, and professional experience. Forecasting, however, is not an exact science. Variations from forecast levels in the local and national economy and in the airline business environment may have a significant effect on the projections presented herein. The current environment is especially uncertain, since no one yet knows the true impact of the financial crisis and the extent of the recession and long-term growth going forward. Likewise, the cost of fuel – a key factor in determining aviation demand, has increased dramatically in volatility. Additional uncertainties occur towards the end of the forecast period, when new technologies and business strategies and changes in work and recreational practices may have an unpredictable impact on aviation activity. For these reasons, the forecasts should be periodically compared with actual Airport activity levels, and Airport plans and policies adjusted accordingly.

On March 19th, 2009, Palm Springs International Airport submitted a draft Forecast of Aviation Activity to the Los Angeles Federal Aviation Administration (FAA) Airport District Office (ADO). As a result of the difference in total operations and enplanements compared to the 2008 Terminal Area Forecast (TAF) of 28% in the 5-year forecast period and 33% in the 10-year forecast period, the Forecast was forwarded to FAA Headquarters for review. It should be noted that the 2009 Draft TAF estimate is closer to the PSP forecast with a percent difference in 2023 of less than 18% for enplanements and operations.

The FAA requested that the submitted forecast consider the current economic recession, which has impacted airports across the country as airlines have announced capacity reductions nation-wide. The Forecast document was revised to include text indicating a consideration of the current economic recession. Particularly, actual passenger activity may track below the projections through 2013. It was further recommended that the Airport closely monitor activity levels and adjust the phasing of planned improvements accordingly. This Forecast, however, is not expected to trigger any airfield capacity enhancement projects. The FAA provided final acceptance of the PSP *Aviation Activity Forecasts* on August 24, 2009.

3.2 SOCIOECONOMIC ANALYSIS

3.2-1 Introduction

The strength of the local and national economy and the cost of available services (air fares and fees) ultimately determine passenger and facility demand. Consequently, the development of an aviation activity forecast requires a clear understanding of local economic forces and trends. This section examines historical and projected income, employment, and population data for Riverside County and the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA).

When developing an aviation forecast, it is important to accurately define the catchment area, because defining it too narrowly would exclude regional economic activity that helps generate passenger traffic and defining it too broadly would inappropriately incorporate economic activity that does not generate passenger traffic for Palm Springs International Airport (PSP). For the purposes of this analysis, two alternative definitions are used. The PSP primary catchment area is defined as Riverside County and the PSP secondary catchment area is defined as the Riverside-San Bernardino-Ontario MSA.

This section examines historical and projected income, employment, and population data for Riverside County and the PSP catchment area. Projections of future population and employment levels are derived from projections prepared by the Southern California Association of Governments (SCAG). SCAG growth rates are applied to historical data to derive future levels of population and employment. Income levels are derived from projections prepared by Woods and Poole Economics (W&P). W&P per capita income growth rates are applied to historical data to derive future levels.

3.2-2 Population

Table 3-1 displays historic (1969-2006) population data for each of the catchment areas. Total population was approximately at 2.0 million for Riverside County and almost 4.0 million for the Riverside-San Bernardino-Ontario MSA in 2006. As shown, the population in Riverside County grew 4.01 percent annually between 1969 and 2006. The rate of growth has slowed somewhat over time; since 1990, the population has grown at a 3.11 percent annual rate. However, the current population growth rate in the Palm Springs area almost triples the US growth rate.

Population projections were prepared by applying SCAG growth rates to the most recent population base for Riverside County and the Riverside-San Bernardino-Ontario MSA, and W&P growth rates were applied to California and the United States. Accordingly, population for Riverside County is estimated to reach 3.27 million by 2028 (**Table 3-2**). Population for the MSA is expected to grow to almost 6.11 million over the same period. Growth rates through 2028 are expected to be slightly less than rates experienced through the 1990's for Riverside County and the MSA, but still higher than those for the nation. The MSA is expected to grow at a slightly slower rate than Riverside County.

3.2-3 Employment

Table 3-3 displays historic (1969-2006) employment data for Riverside County and the Riverside-San Bernardino-Ontario MSA. Employment growth in Riverside County (3.80 percent) outpaced that of the U.S. (1.46 percent). Riverside County has 860,027 jobs, and the MSA has 1.72 million jobs. Leisure and hospitality, agriculture, educational and health services, and professional and business services are the leading industries in the Palm Springs area. In line with the population forecasts, employment growth for Riverside County is estimated at 2.81 percent, annually, through 2028 (**Table 3-4**).

Table 3-1

Historical Population

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	450,477	1,122,165	19,711,000	201,298,000
1970	460,682	1,143,539	20,023,181	203,798,722
1971	477,557	1,171,161	20,345,575	206,817,509
1972	493,221	1,189,476	20,584,794	209,274,882
1973	497,917	1,202,185	20,867,737	211,349,205
1974	515,875	1,229,743	21,172,548	213,333,635
1975	528,632	1,248,571	21,536,715	215,456,585
1976	548,029	1,282,517	21,934,505	217,553,859
1977	577,957	1,347,627	22,350,247	219,760,875
1978	611,852	1,435,733	22,838,960	222,098,244
1979	640,044	1,496,847	23,255,069	224,568,579
1980	669,473	1,572,429	23,800,800	227,224,719
1981	693,249	1,626,183	24,285,933	229,465,744
1982	719,842	1,686,602	24,820,007	231,664,432
1983	746,898	1,743,463	25,360,023	233,792,014
1984	783,202	1,811,019	25,844,397	235,824,907
1985	825,685	1,897,927	26,441,107	237,923,734
1986	871,209	1,995,378	27,102,238	240,132,831
1987	930,059	2,122,256	27,777,160	242,288,936
1988	995,977	2,267,166	28,464,250	244,499,004
1989	1,084,568	2,437,479	29,218,165	246,819,222
1990	1,193,156	2,630,471	29,959,515	249,622,814
1991	1,246,326	2,739,150	30,470,736	252,980,941
1992	1,286,364	2,821,341	30,974,659	256,514,224
1993	1,315,090	2,864,517	31,274,928	259,918,588
1994	1,346,651	2,905,505	31,484,435	263,125,821
1995	1,373,034	2,949,807	31,696,582	266,278,393
1996	1,393,732	2,990,316	32,018,834	269,394,284
1997	1,423,934	3,042,372	32,486,010	272,646,925
1998	1,461,916	3,108,220	32,987,675	275,854,104
1999	1,507,912	3,189,513	33,499,204	279,040,168
2000	1,559,431	3,278,271	34,004,051	282,194,308
2001	1,616,415	3,379,383	34,525,902	285,112,030
2002	1,686,415	3,490,698	34,963,856	287,888,021
2003	1,769,356	3,622,604	35,376,833	290,447,644
2004	1,853,393	3,760,531	35,721,991	293,191,511
2005	1,927,211	3,880,440	35,990,312	295,895,897
2006	2,007,206	3,994,711	36,249,872	298,754,819
		Average Annual Growth		
1969-2006	4.01%	3.40%	1.62%	1.04%
1980-2006	4.15%	3.51%	1.57%	1.02%
1990-2006	3.11%	2.49%	1.13%	1.06%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-2

Projected Population

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
	SCAG Projections		**Woods & Poole Projections**	
2000	N/A	N/A	34,008,499	282,216,952
2001	N/A	N/A	34,550,466	285,226,284
2002	N/A	N/A	35,024,517	288,125,973
2003	1,747,879	3,612,129	35,466,365	290,796,023
2004	1,837,316	3,754,584	35,841,254	293,638,158
2005	1,931,330	3,902,658	36,154,147	296,507,061
2006	1,989,945	4,001,908	36,457,549	299,398,484
2008	2,112,567	4,208,043	37,327,060	306,044,993
2013	2,399,083	4,701,241	39,303,363	321,059,943
2018	2,685,066	5,187,325	41,382,626	336,940,300
2023	2,974,384	5,670,317	43,539,597	353,465,106
2028	3,239,851	6,122,697	45,828,799	371,070,802
	SCAG Growth Rates Applied to BEA 2006 Base Year Data		**Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data**	
2006 (b)	2,007,206	3,994,711	36,249,872	298,754,819
2008	2,130,891	4,200,476	37,114,430	305,387,039
2013	2,419,892	4,692,787	39,079,475	320,369,709
2018	2,708,356	5,177,997	41,146,894	336,215,926
2023	3,000,184	5,660,121	43,291,577	352,705,205
2028	3,267,953	6,111,687	45,567,740	370,273,051
		Average Annual Growth		
2006-2028	2.24%	1.95%	1.05%	0.98%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.1.

Sources: United States Department of Commerce, Bureau of Economic Analysis and Woods & Poole Economics, CEDDS 2007.

Table 3-3

Historical Employment

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	167,296	410,506	9,032,870	91,057,200
1970	171,340	418,790	9,057,029	91,281,600
1971	174,895	422,980	9,036,239	91,586,400
1972	179,524	436,775	9,368,633	94,317,200
1973	190,960	458,353	9,844,104	98,432,500
1974	195,087	468,665	10,163,287	100,117,800
1975	199,073	473,347	10,286,544	98,906,600
1976	210,322	491,513	10,633,166	101,597,200
1977	226,672	524,096	11,119,486	105,049,200
1978	247,414	565,736	11,802,515	109,688,600
1979	259,889	596,922	12,462,209	113,289,100
1980	264,825	610,735	12,776,784	114,231,200
1981	267,470	620,236	12,969,433	115,304,000
1982	268,189	620,292	12,899,283	114,557,300
1983	280,890	647,463	13,218,709	116,056,700
1984	300,016	688,054	13,852,221	121,091,100
1985	321,877	740,046	14,359,249	124,509,700
1986	342,914	786,022	14,787,472	126,970,300
1987	364,331	834,805	15,394,351	130,400,400
1988	394,355	895,826	16,132,899	134,506,900
1989	423,888	955,511	16,550,106	137,199,800
1990	455,859	1,011,187	16,965,207	139,380,900
1991	473,229	1,045,761	16,869,884	138,605,800
1992	469,659	1,043,069	16,509,567	139,162,100
1993	477,269	1,046,911	16,483,694	141,779,400
1994	494,023	1,072,918	16,658,844	145,223,600
1995	513,371	1,107,339	17,058,764	148,982,800
1996	526,688	1,140,077	17,466,073	152,150,200
1997	549,175	1,175,876	17,786,862	155,608,200
1998	591,753	1,248,453	18,504,281	159,628,200
1999	629,146	1,322,683	19,024,298	162,955,300
2000	662,404	1,384,410	19,626,033	166,758,800
2001	688,835	1,428,463	19,715,866	167,014,700
2002	719,097	1,474,945	19,660,375	166,633,100
2003	747,567	1,524,386	19,780,956	167,553,500
2004	783,857	1,584,792	19,796,639	170,512,700
2005	820,172	1,651,355	20,035,297	174,176,400
2006	860,027	1,718,422	20,525,491	178,332,900
		Average Annual Growth		
1969-2006	4.40%	3.84%	2.18%	1.78%
1980-2006	4.46%	3.91%	1.77%	1.66%
1990-2006	3.80%	3.17%	1.13%	1.46%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-4

Projected Employment

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
	SCAG Projections		Woods & Poole Projections	
2000	N/A	N/A	19,626,032	166,758,782
2001	N/A	N/A	19,715,866	167,014,683
2002	N/A	N/A	19,660,377	166,633,089
2003	587,279	1,226,225	19,780,952	167,553,474
2004	617,995	1,288,786	20,101,447	170,512,658
2005	650,317	1,354,539	20,548,597	174,249,503
2006	675,263	1,399,576	20,916,388	176,969,936
2008	728,062	1,494,193	21,651,951	182,801,290
2013	858,546	1,720,165	23,490,767	197,379,998
2018	987,729	1,925,801	25,329,082	211,958,828
2023	1,116,367	2,129,279	27,166,772	226,537,961
2028	1,243,221	2,341,532	29,003,594	241,117,273
	SCAG Growth Rates Applied to BEA 2006 Base Year Data		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data	
2006 (b)	860,027	1,718,422	20,525,491	178,332,900
2008	927,273	1,834,594	21,247,307	184,209,165
2013	1,093,460	2,112,046	23,051,759	198,900,154
2018	1,257,989	2,364,529	24,855,719	213,591,265
2023	1,421,825	2,614,362	26,659,064	228,282,682
2028	1,583,388	2,874,970	28,461,559	242,974,279
		Average Annual Growth		
2006-2028	2.81%	2.37%	1.50%	1.42%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.3.

Source: United States Department of Commerce, Bureau of Economic Analysis.

3.2-4 Income

Table 3-5 shows historical (1969-2006) real personal income expressed in thousands of year 2007 dollars. Over the period, income has grown approximately 5.27 percent per year in Riverside County, compared to 3.05 percent per year in the U.S. Income in Riverside County grew significantly faster than in the MSA, California, or the United States.

Forecasts of the long-term impact of the current financial crisis on local and national economic growth are not yet available. Some recent assessments of 2009 GDP growth in the U.S. are as follows:

- OECD: 0.9 percent
- Economist Magazine (survey of economists): 1.0 percent
- U.S. Energy Information Administration: 1.4 percent
- Conference Board: 1.5 percent

Based on the above information, it is recommended that the 2009 income forecasts reflect a 1.25 percent decrease from 2008 levels. Afterwards, income growth would be assumed to resume at the originally projected rate. Post-2009 it is assumed that over the forecast period economic growth periods will offset economic downturns such as the one currently being experienced.

SCAG does not publish income projections; therefore future income was estimated by multiplying the SCAG population forecasts by the W&P per capita income forecasts. The results were then adjusted downwards by 3.51 percent, reflecting the anticipated 1.25 percent downturn plus the lost 2.26 percent growth that would have been expected absent the recession. Income in Riverside County is expected to grow more slowly (3.12 percent) through 2028 (**Table 3-6**) than it has in the past. This projected growth rate still exceeds the US projected growth rate (2.09 percent).

Table 3-7 displays historical per capita personal income (PCPI) from 1969 through 2006 expressed in 2007 dollars. Between 1969 and 2006, PCPI in Riverside County grew about 1.21 percent per year, from $18,658 to $29,463. PCPI in Riverside County was higher than that of the U.S. until 1989, and it has grown at a slower rate since then. PCPI in Riverside-San Bernardino-Ontario MSA has grown at a slightly higher rate over the same time period. W&P's PCPI projections are presented in **Table 3-8**. PCPI in Riverside County is expected to reach $35,543 (2007 dollars) by 2028, compared to $47,935 for the country. PCPI for Riverside County is expected to grow more slowly (0.86 percent) between 2006 and 2028.

Table 3-5

Historical Income (thousands of 2007 dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	8,404,958	19,765,820	415,704,154	3,595,945,683
1970	8,956,409	20,975,904	428,255,465	3,701,394,541
1971	9,384,295	21,790,130	436,849,425	3,829,696,567
1972	10,155,964	23,528,309	462,790,415	4,069,275,741
1973	10,892,767	24,926,271	484,918,476	4,322,338,141
1974	11,066,977	25,367,883	491,510,267	4,313,994,853
1975	11,597,029	26,523,256	502,146,157	4,349,788,043
1976	12,584,540	28,634,808	531,896,245	4,553,883,964
1977	13,445,441	30,422,168	557,424,637	4,735,790,233
1978	14,691,345	32,996,799	594,934,673	4,979,217,312
1979	15,396,487	34,634,585	624,905,487	5,132,538,070
1980	16,086,441	36,122,625	642,348,057	5,189,851,497
1981	17,048,162	38,081,646	663,397,388	5,350,513,762
1982	17,523,920	38,903,668	671,104,675	5,431,987,813
1983	18,566,528	40,998,623	695,277,143	5,556,236,637
1984	20,513,796	44,825,938	750,227,442	5,945,488,754
1985	22,266,998	48,676,306	787,686,723	6,169,140,160
1986	24,238,295	52,614,944	821,232,849	6,359,840,607
1987	25,971,781	56,354,287	854,076,726	6,522,042,689
1988	28,153,542	60,175,425	889,509,411	6,756,552,552
1989	30,669,607	64,704,122	918,928,702	6,983,965,753
1990	32,607,717	68,555,466	947,058,594	7,102,891,197
1991	32,151,289	67,832,577	934,288,862	7,094,202,541
1992	32,643,172	68,802,350	954,617,955	7,330,034,813
1993	32,793,504	68,743,233	948,139,717	7,430,920,889
1994	33,133,357	69,244,353	958,250,449	7,652,454,765
1995	33,659,051	70,096,928	983,429,271	7,890,929,888
1996	34,652,883	71,675,041	1,018,841,083	8,187,058,361
1997	36,221,621	74,768,693	1,063,884,387	8,539,476,373
1998	39,319,335	80,395,693	1,146,883,187	9,086,403,073
1999	41,084,385	83,646,750	1,204,306,775	9,396,192,747
2000	43,529,953	87,950,362	1,298,129,127	9,904,443,245
2001	46,046,269	92,618,569	1,307,744,752	10,041,010,992
2002	47,714,220	95,576,701	1,303,553,288	10,077,635,186
2003	50,141,387	99,647,634	1,321,979,867	10,190,505,245
2004	52,982,707	104,976,123	1,373,527,379	10,536,441,805
2005	56,015,119	109,675,233	1,420,906,896	10,838,535,953
2006	59,138,390	114,443,028	1,473,097,681	11,248,257,992
		Average Annual Growth		
1969-2006	5.27%	4.73%	3.39%	3.05%
1980-2006	4.94%	4.36%	3.12%	2.91%
1990-2006	3.56%	3.06%	2.63%	2.74%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-6

Projected Income

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
Woods & Poole Projections (000's 2004 dollars)				
2000	N/A	N/A	1,196,282,961	9,127,178,445
2001	N/A	N/A	1,205,120,254	9,253,025,879
2002	N/A	N/A	1,201,270,884	9,286,876,362
2003	45,339,981	91,047,324	1,218,234,171	9,390,966,767
2004	48,433,495	96,511,592	1,268,063,567	9,716,486,648
2005	51,000,631	100,973,470	1,298,006,186	9,935,062,093
2006	52,210,198	104,873,988	1,290,852,437	10,143,620,638
2008	56,198,513	111,710,913	1,350,231,741	10,590,074,893
2013	66,852,847	130,417,118	1,512,786,442	11,816,611,202
2018	78,768,774	151,106,111	1,697,466,818	13,214,112,302
2023	92,156,509	174,005,740	1,905,889,769	14,793,380,268
2028	106,276,519	198,409,657	2,142,385,931	16,588,446,539
Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data				
2006 (b)	59,138,390	114,443,028	1,473,097,681	11,248,257,992
2008	63,655,946	121,903,776	1,540,860,279	11,743,330,986
2013	75,724,090	142,316,795	1,726,364,791	13,103,436,744
2018	89,221,237	164,893,519	1,937,118,728	14,653,125,310
2023	104,385,498	189,882,584	2,174,967,268	16,404,375,100
2028	120,379,206	216,513,193	2,444,852,452	18,394,923,569
Average Annual Growth				
2006-2028	3.28%	2.94%	2.33%	2.26%
Income Estimated by Multiplying Population Forecasts by Adjusted Per Capita Income Forecasts (c)				
2006 (b)	59,138,390	114,443,028	1,473,097,681	11,248,257,992
2008	63,655,946	121,903,776	1,540,860,279	11,743,330,986
2013	73,065,482	137,320,176	1,665,753,612	12,643,386,382
2018	86,088,756	159,104,250	1,869,108,161	14,138,666,719
2023	100,720,613	183,215,970	2,098,606,043	15,828,431,639
2028	116,152,795	208,911,602	2,359,015,791	17,749,093,668
Average Annual Growth				
2006-2028	3.12%	2.77%	2.16%	2.09%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.5.
(c) Population forecasts in Table 2 multiplied by Per Capita Income Forecasts in Table 3.8.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-7

Historical Per Capita Income (2007 dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	18,658	17,614	21,090	17,864
1970	19,442	18,343	21,388	18,162
1971	19,651	18,606	21,471	18,517
1972	20,591	19,780	22,482	19,445
1973	21,877	20,734	23,238	20,451
1974	21,453	20,629	23,215	20,222
1975	21,938	21,243	23,316	20,189
1976	22,963	22,327	24,249	20,932
1977	23,264	22,575	24,940	21,550
1978	24,011	22,983	26,049	22,419
1979	24,055	23,138	26,872	22,855
1980	24,029	22,972	26,989	22,840
1981	24,592	23,418	27,316	23,317
1982	24,344	23,066	27,039	23,448
1983	24,858	23,516	27,416	23,766
1984	26,192	24,752	29,029	25,211
1985	26,968	25,647	29,790	25,929
1986	27,821	26,368	30,301	26,485
1987	27,925	26,554	30,747	26,918
1988	28,267	26,542	31,250	27,634
1989	28,278	26,546	31,451	28,296
1990	27,329	26,062	31,611	28,454
1991	25,797	24,764	30,662	28,042
1992	25,376	24,386	30,819	28,576
1993	24,936	23,998	30,316	28,589
1994	24,604	23,832	30,436	29,083
1995	24,514	23,763	31,026	29,634
1996	24,863	23,969	31,820	30,391
1997	25,438	24,576	32,749	31,321
1998	26,896	25,866	34,767	32,939
1999	27,246	26,226	35,950	33,673
2000	27,914	26,828	38,176	35,098
2001	28,487	27,407	37,877	35,218
2002	28,293	27,380	37,283	35,005
2003	28,339	27,507	37,369	35,086
2004	28,587	27,915	38,450	35,937
2005	29,065	28,264	39,480	36,630
2006	29,463	28,649	40,637	37,650
		Average Annual Growth		
1969-2006	1.21%	1.29%	1.74%	1.98%
1980-2006	0.76%	0.82%	1.53%	1.87%
1990-2006	0.44%	0.56%	1.49%	1.66%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Sources: Tables 3.1 and 3.5 and HNTB analysis.

Table 3-8

Projected Per Capita Income (2004 Dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
		Woods & Poole Projections (b)		
2000	25,713	24,715	35,176	32,341
2001	26,178	25,229	34,880	32,441
2002	25,945	25,135	34,298	32,232
2003	25,940	25,206	34,349	32,294
2004	26,361	25,705	35,380	33,090
2005	26,407	25,873	35,902	33,507
2006	26,237	26,206	35,407	33,880
2008	26,602	26,547	36,173	34,603
2013	27,866	27,741	38,490	36,805
2018	29,336	29,130	41,019	39,218
2023	30,983	30,687	43,774	41,852
2028	32,803	32,406	46,748	44,704
		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data		
2006	29,463	28,649	40,637	37,650
2008	29,873	29,021	41,516	38,454
2013	31,292	30,327	44,176	40,901
2018	32,943	31,845	47,078	43,582
2023	34,793	33,547	50,240	46,510
2028	36,836	35,426	53,653	49,679
		Average Annual Growth		
2006-2028	1.02%	0.97%	1.27%	1.27%
		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data and Adjusted for Recession (c)		
2006	29,463	28,649	40,637	37,650
2008	29,873	29,021	41,516	38,454
2013	30,194	29,262	42,625	39,465
2018	31,786	30,727	45,425	42,052
2023	33,571	32,370	48,476	44,877
2028	35,543	34,182	51,769	47,935
		Average Annual Growth		
2006-2028	0.86%	0.81%	1.11%	1.10%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Income divided by population.
(c) Post-2008 projections adjusted downward by 3.51% to account for estimated lost growth due to financial crisis and recession.

Sources: Tables 3.2 and 3.6 and HNTB analysis.

3.3 HISTORICAL AVIATION ACTIVITY AT PSP

3.3-1 Introduction

This section describes historical and current aviation activity and trends at PSP. This information provides the basis for developing the forecasts. Included are discussions of historical passenger traffic, along with trends in air fares and fleet mix. Historical air cargo and aircraft operations are also described.

3.3-2 Historical Passenger Activity

Table 3-9 shows total passenger enplanements, domestic origin-destination (O&D) traffic, and fares and yields at PSP from 1990 to 2008. Passenger traffic at PSP consists of two major components, the resident Origination and Destination (O&D) passenger traffic and the visitor traffic. Resident O&D traffic for PSP, which is delineated as being initiated from base, consists of travelers whose initial origination point and final destination point in their itinerary is PSP. Visiting passengers, delineated as initiated from another city, have itineraries with PSP as their initial destination point and final origination point. The two categories are subject to differing economic factors. Therefore, the two components were separated to forecast the potential O&D passenger traffic that PSP will generate in the future

Passenger enplanements have grown at about 2.97 percent per year since 1990. Average growth rates for enplanements dipped slightly after the September 2001 terrorist attacks. However, enplanement levels have increased steadily since 2003 for both mainline and other carriers, although the financial crisis that began during 2008 and into 2009 will likely lower enplanement levels in the near term, then begin to rebound back into a growth posture. Historical enplanements are broken by major airline in **Appendix A**.

Domestic O&D traffic has grown at a slower rate than enplanements, with 2.85 percent growth since 1990 compared to 2.97 percent. Resident O&D traffic is driving overall O&D growth with a 3.88 percent growth since 1990, while visitor O&D traffic is growing more slowly at 2.51 percent. This is likely because the Palm Springs area and Riverside County have grown at a faster rate than the nation as measured by population, income and employment. Therefore, demand has risen faster for resident O&D than visitor O&D in the PSP market. Fares at PSP have decreased in real terms until 2005, when they have since increased slightly likely because of higher industry fuel costs.

As shown, there has been a significant increase in the average passenger trip length. The result is that the real yields (revenue per passenger mile) have decreased throughout the period. Fares and yields are also shown with taxes and fees included, since these are the costs faced by passengers when purchasing air travel services.

Table 3-10 shows fares and yields at PSP and compares them to fares and yields at seven competing airports: Bob Hope Airport (BUR), Los Angeles International Airport (LAX), Long Beach Airport (LGB), Ontario International Airport (ONT), Palmdale Regional Airport (PMD), San Bernardino International Airport (SBD), and John Wayne Airport (SNA). PSP's main competitors in the area are ONT and LAX. Fares and yields at ONT and LAX are lower than at PSP, and were declining until recently. Average fares at ONT have been lower than those at PSP since 1990. Fares at LAX were lower than PSP until about

2000, and have been about the same ever since. From a pricing standpoint, ONT has a competitive advantage since Southwest Airlines is a major service provider there.

3.3-3 Air Cargo

Table 3-11 shows enplaned and deplaned air cargo (freight and mail) at PSP from 1990 through 2007. Historically, PSP has only had domestic air cargo, and does not have any committed air cargo facilities. Total freight and mail has declined 16.63 percent since 1990, due to stricter security regulations for passenger carriers, the large presence of cargo handlers at ONT, and the limited amount of airfreight being generated out of this area,

Table 3-9

Historical Passenger Enplanements, Originations, and Yield

	Enplanements (a)			Domestic O&D Passengers			Average Real Fare		Average Real Yield	
Year	Mainline Carriers	Other Carriers	Total	Total (b)	Resident (Initiated from Base) (b)	Visitor (Initiated from Reference) (b)	w/o Taxes & Fees (c)	w/ Taxes & Fees (d)	w/o Taxes & Fees (c)	w/ Taxes & Fees (d)
1990	438,277	18,735	457,012	781,090	189,380	580,780	$ 260.23	$ 281.49	20.20	21.85
1991	407,886	18,981	426,867	737,020	178,400	547,590	$ 240.41	$ 264.45	18.34	20.18
1992	421,553	18,995	440,548	740,550	180,920	548,350	$ 233.41	$ 261.09	16.90	18.90
1993	399,409	27,006	426,415	726,250	184,500	532,240	$ 242.71	$ 271.96	18.27	20.47
1994	445,844	40,800	486,644	755,800	190,380	553,230	$ 226.63	$ 256.09	15.40	17.40
1995	452,898	18,764	471,662	806,140	205,150	588,690	$ 213.29	$ 241.02	15.45	17.46
1996	517,980	41,638	559,618	947,440	251,740	683,240	$ 209.88	$ 223.31	15.85	16.87
1997	577,060	10,025	587,085	1,079,100	279,550	784,510	$ 198.35	$ 220.60	15.54	17.28
1998	625,794	3,679	629,473	1,075,940	255,770	804,170	$ 201.54	$ 227.80	14.89	16.83
1999	631,588	3,072	634,660	1,092,760	276,660	803,300	$ 199.04	$ 224.61	15.25	17.20
2000	640,581	1,877	642,458	1,115,660	282,880	821,920	$ 197.62	$ 222.85	15.21	17.15
2001	587,846	1,604	589,450	1,018,630	257,320	753,370	$ 185.58	$ 210.75	14.11	16.02
2002	556,028	-	556,028	973,580	256,160	709,490	$ 175.17	$ 205.94	13.00	15.29
2003	623,849	2,560	626,409	1,118,190	306,200	802,880	$ 158.82	$ 186.48	11.86	13.93
2004	683,630	3,531	687,161	1,214,720	345,190	859,380	$ 155.54	$ 184.23	11.52	13.65
2005	693,692	19,787	713,479	1,256,950	366,560	879,430	$ 164.78	$ 193.92	12.00	14.13
2006	720,165	44,944	765,109	1,326,990	385,360	929,880	$ 178.15	$ 208.15	12.83	14.99
2007	737,492	68,054	805,546	1,346,930	391,080	943,970	$ 171.17	$ 200.20	12.59	14.73
2008 (e)	681,972	92,084	774,056	1,294,276	375,792	907,069	n/a	n/a	n/a	n/a
				Average Annual Growth						
1990-2000	3.87%	-20.55%	3.46%	3.63%	4.09%	3.53%	-2.71%	-2.31%	-2.80%	-2.40%
1990-2008	2.49%	9.25%	2.97%	2.85%	3.88%	2.51%	-2.43%	-1.98%	-2.74%	-2.30%

(a) 1990-2007 from Palm Springs International Airport Aviation Activity reports. Includes domestic and international enplanements.

(b) USDOT Origin-Destination Survey as compiled by Data Base Products, Inc. In some instances resident and visitor status cannot be distinguished so the sum of the two categories is less than the total.

(c) USDOT Origin-Destination Survey as compiled by Data Base Products, Inc. Converted to 2007 prices. Does not include ticket taxes, PFCs or security fees.

(d) Includes ticket taxes, PFCs and security fees.

(e) Enplanement and deplanement data are actual. O&D are estimated assuming same ratio of O&D passenger to enplanements as in 2007.

Sources: As noted and HNTB analysis.

Table 3-10

Comparison of Air Fares and Yields at PSP, BUR, LAX, LGB, ONT, PMD, SBD, and SNA
(2007 Prices)

	Average Fare (w/ Taxes & Fees) (a)								Average Yield (w/ Taxes & Fees) (a)							
Year	**PSP**	**BUR**	**LAX**	**LGB**	**ONT**	**PMD**	**SBD**	**SNA**	**PSP**	**BUR**	**LAX**	**LGB**	**ONT**	**PMD**	**SBD**	**SNA**
1990	$ 281.49	$ 145.55	$ 250.70	$ 205.27	$ 195.68	$ 211.72	$ -	$ 246.42	21.85	27.43	16.66	22.23	19.31	24.37	-	23.18
1991	$ 264.45	$ 118.24	$ 230.89	$ 155.46	$ 170.58	$ 247.13	$ -	$ 221.68	20.18	23.70	15.83	19.99	17.68	23.63	-	20.04
1992	$ 261.09	$ 117.86	$ 217.60	$ 168.97	$ 163.24	$ 299.35	$ -	$ 222.11	18.90	22.47	14.82	19.69	16.22	23.26	-	18.72
1993	$ 271.96	$ 112.67	$ 228.57	$ 178.14	$ 165.04	$ 295.71	$ -	$ 233.74	20.47	21.88	16.10	21.09	17.57	23.29	-	19.85
1994	$ 256.09	$ 103.42	$ 210.84	$ 150.66	$ 150.42	$ 301.38	$ -	$ 208.32	17.40	20.22	15.06	18.68	16.78	19.67	-	18.38
1995	$ 241.02	$ 102.31	$ 200.88	$ 140.85	$ 145.25	$ 150.64	$ -	$ 200.29	17.46	19.85	14.77	21.06	16.20	24.22	-	18.37
1996	$ 223.31	$ 103.59	$ 187.08	$ 115.98	$ 137.55	$ 139.02	$ -	$ 190.28	16.87	19.75	13.79	17.95	15.08	22.50	-	18.03
1997	$ 220.60	$ 107.84	$ 197.92	$ 134.30	$ 141.81	$ 248.50	$ -	$ 189.87	17.28	21.15	14.13	13.66	15.43	19.20	-	17.88
1998	$ 227.80	$ 109.69	$ 208.53	$ 182.65	$ 149.23	$ 303.01	$ 37.02	$ 206.35	16.83	21.45	14.64	17.28	16.05	23.23	7.87	19.10
1999	$ 224.61	$ 114.39	$ 206.54	$ 205.00	$ 153.31	$ -	$ 42.14	$ 206.21	17.20	22.19	14.50	18.75	16.16	-	8.95	18.64
2000	$ 222.85	$ 119.62	$ 216.51	$ 199.80	$ 157.98	$ -	$ -	$ 213.82	17.15	22.42	14.88	17.56	16.21	-	-	19.12
2001	$ 210.75	$ 113.98	$ 197.60	$ 192.57	$ 145.08	$ -	$ -	$ 192.15	16.02	20.31	13.18	14.29	14.43	-	-	16.80
2002	$ 205.94	$ 117.44	$ 193.91	$ 182.21	$ 141.43	$ -	$ -	$ 172.65	15.29	19.02	12.54	10.76	13.52	-	-	15.09
2003	$ 186.48	$ 120.25	$ 188.00	$ 156.30	$ 140.40	$ -	$ -	$ 165.39	13.93	19.03	12.07	9.87	13.35	-	-	14.06
2004	$ 184.23	$ 120.76	$ 176.07	$ 146.46	$ 139.93	$ 118.04	$ -	$ 157.79	13.65	18.86	11.12	8.89	13.24	60.23	-	13.65
2005	$ 193.92	$ 129.36	$ 183.01	$ 148.89	$ 146.27	$ 115.10	$ -	$ 162.54	14.13	17.48	11.63	9.29	13.54	57.05	-	14.39
2006	$ 208.15	$ 140.20	$ 194.30	$ 156.80	$ 156.48	$ 111.78	$ -	$ 173.59	14.99	17.40	12.28	10.81	14.59	57.03	-	15.36
2007	$ 200.20	$ 135.93	$ 194.81	$ 152.56	$ 154.65	$ 169.35	$ -	$ 168.41	14.73	16.69	12.46	10.95	14.52	16.93	-	14.92
								Average Annual Growth								
1990-2000	-2.31%	-1.94%	-1.46%	-0.27%	-2.12%	-	-	-1.41%	-2.40%	-2.00%	-1.12%	-2.33%	-1.73%	-	-	-1.91%
1990-2007	-1.98%	-0.40%	-1.47%	-1.73%	-1.37%	-1.30%	-	-2.21%	-2.30%	-2.88%	-1.69%	-4.08%	-1.66%	-2.12%	-	-2.56%

(a) Includes tickets taxes, PFCs and security fees.

Sources: USDOT Origin-Destination Survey as compiled by Data Base Products and HNTB analysis.

Table 3-11

History of Air Cargo at PSP
(Pounds)

Year	Domestic Air Freight Enplaned	Deplaned	Total
1990	310,286	533,845	844,131
1991	270,291	454,441	724,732
1992	230,442	427,692	658,134
1993	226,277	399,758	626,035
1994	195,746	398,140	593,886
1995	134,391	313,940	448,331
1996	153,082	326,961	480,043
1997	135,772	330,048	465,820
1998	120,023	275,817	395,840
1999	82,189	180,855	263,044
2000	89,600	198,725	288,325
2001	74,811	128,021	202,832
2002	40,889	122,250	163,139
2003	43,944	182,879	226,823
2004	38,798	169,461	208,259
2005	35,052	114,112	149,164
2006	12,824	41,449	54,273
2007	18,850	19,490	38,340
Average Annual Growth			
1990-2000	-11.68%	-9.41%	-10.19%
1990-2007	-15.19%	-17.69%	-16.63%

Sources:1990-2007 from Palm Springs International Airport Aviation Activity reports.

3.3-4 Aircraft Operations

Table 3-12 shows aircraft operations at PSP since 1990. Over the period, air carrier operations decreased until the mid-1990s, increased until 2001 until a slight dip occurred, then increased again until 2008 where it leveled off. Air taxi operations, which in this instance include regional carriers, have generally decreased since 1994, with an average annual decrease of 2.09 percent since 1990. General aviation operations decreased until the mid-1990's, then increased until 2002 and have declined since. Military operations fluctuated dramatically over the same period. Total aircraft operations decreased from 116,242 in 1990 to 72,876 in 2008, an average annual decrease of 2.56 percent.

3.3-5 Monthly and Daily Distributions

Table 3-13 shows the monthly distribution of passenger enplanements and deplanements for 2007. The seasonal distribution of activity at PSP is much more pronounced than at most other airports, with winter activity exceeding summer activity by a factor of two or three. Palm Springs is a warm weather destination, which explains why the highest levels of enplanements and deplanements are during the winter months from November through April. **Table 3-14** shows the monthly distribution of operations during 2007. Comparatively, the peak month for both enplanements and deplanements was March with 115,392 enplanements and 115,437 deplanements in 2007.

The peak month for air carrier, air taxi, and general aviation operations occurred in March, which corresponds to the peak month for passenger enplanements and deplanements. The peak month for military operations is April. Although a minute percentage of overall operations, military operations are not as seasonally sensitive as the categories in regard to operations. The average day during the peak month is Thursday, although the number of operations per day during the week varies by approximately 10%. **Table 3-15** shows the scheduled aircraft arrivals and departures by hour for a weekday in March, 2008. The busiest time of day at PSP occurs in the late morning for both arrivals and departures. The peak hour for arrivals is between 10:50 and 11:50 AM and departures is between 11:15 and 12:15 PM, with the total peak hour being the same as arrivals. Seat arrivals and departures are the same for the corresponding categories.

Table 3-12

Historical Aircraft Operations at PSP

Year	Air Carrier	Air Taxi	General Aviation	Military	Total
1990	12,270	30,890	71,432	1,650	116,242
1991	9,436	29,016	56,835	1,522	96,809
1992	7,833	32,822	50,777	2,222	93,654
1993	6,901	34,153	48,983	1,063	91,100
1994	7,339	35,367	54,498	928	98,132
1995	6,992	34,091	56,113	1,254	98,450
1996	8,744	30,700	50,392	749	90,585
1997	7,739	28,497	52,951	293	89,480
1998	8,653	29,025	54,562	940	93,180
1999	8,358	30,527	63,520	1,547	103,952
2000	9,580	26,206	59,287	1,030	96,103
2001	8,245	27,995	61,588	730	98,558
2002	9,060	23,518	71,011	866	104,455
2003	8,261	26,067	57,763	977	93,068
2004	8,761	25,427	60,084	897	95,169
2005	9,766	23,312	58,820	955	92,853
2006	10,287	24,959	58,073	1,259	94,578
2007	11,520	24,371	47,476	1,310	84,677
2008	11,331	21,137	39,181	1,227	72,876
Average Annual Growth					
1990-2000	-2.44%	-1.63%	-1.85%	-4.60%	-1.88%
1990-2007	-0.44%	-2.09%	-3.28%	-1.63%	-2.56%

Sources: 1990-2008 from Palm Springs International Airport Aviation Activity reports.

Table 3-13

Monthly Distribution of Passenger Enplanements and Deplanements (2007)

Month	Enplanements	Deplanements	Total	% of Yearly Enp.	% of Yearly Dep.	% of Yearly Total
January	84,749	87,835	172,584	10.5%	10.9%	10.7%
February	91,204	94,945	186,149	11.3%	11.8%	11.6%
March	115,392	115,437	230,829	14.3%	14.3%	14.3%
April	96,244	84,920	181,164	11.9%	10.5%	11.2%
May	62,765	56,511	119,276	7.8%	7.0%	7.4%
June	41,159	40,093	81,252	5.1%	5.0%	5.0%
July	36,120	34,372	70,492	4.5%	4.3%	4.4%
August	36,039	37,121	73,160	4.5%	4.6%	4.5%
September	37,324	39,596	76,920	4.6%	4.9%	4.8%
October	54,878	58,331	113,209	6.8%	7.2%	7.0%
November	77,783	80,362	158,145	9.7%	10.0%	9.8%
December	71,889	75,874	147,763	8.9%	9.4%	9.2%
Total	805,546	805,397	1,610,943			
Peak Month						
March	115,392	115,437	230,829	14.3%	14.3%	14.3%

Sources: Sources: 2007 from Palm Springs International Airport Aviation Activity report.

Table 3-14

Monthly Distribution of Operations (2007)

Month	AC	AT	AC & AT	GA	MIL	Total	% of Yearly AC	% of Yearly AT	% of Yearly AC&AT	% of Yearly GA	% of Yearly MIL	% of Yearly Total
January	1,413	2,418	3,831	4,581	81	8,493	12.3%	9.9%	10.7%	9.6%	6.2%	10.0%
February	1,439	2,337	3,776	4,494	190	8,460	12.5%	9.6%	10.5%	9.5%	14.5%	10.0%
March	1,723	2,748	4,471	6,066	63	10,600	15.0%	11.3%	12.5%	12.8%	4.8%	12.5%
April	1,263	2,474	3,737	5,091	208	9,036	11.0%	10.2%	10.4%	10.7%	15.9%	10.7%
May	762	2,123	2,885	4,845	100	7,830	6.6%	8.7%	8.0%	10.2%	7.6%	9.2%
June	333	1,708	2,041	3,669	84	5,794	2.9%	7.0%	5.7%	7.7%	6.4%	6.8%
July	379	1,629	2,008	2,733	117	4,858	3.3%	6.7%	5.6%	5.8%	8.9%	5.7%
August	320	1,578	1,898	2,601	86	4,585	2.8%	6.5%	5.3%	5.5%	6.6%	5.4%
September	533	1,464	1,997	2,585	73	4,655	4.6%	6.0%	5.6%	5.4%	5.6%	5.5%
October	742	1,780	2,522	3,600	127	6,249	6.4%	7.3%	7.0%	7.6%	9.7%	7.4%
November	1,237	2,147	3,384	3,902	108	7,394	10.7%	8.8%	9.4%	8.2%	8.2%	8.7%
December	1,376	1,965	3,341	3,309	73	6,723	11.9%	8.1%	9.3%	7.0%	5.6%	7.9%
Total	11,520	24,371	35,891	47,476	1,310	84,677						
Peak Month												
March	1,723	2,748	4,471	6,066		10,600	15.0%	11.3%	12.5%	12.8%		12.5%
April					208						15.9%	

Sources: Sources: 2007 from Palm Springs International Airport Aviation Activity report.

Table 3-15

Scheduled Passenger Aircraft Arri vals and Departures by Hour
Weekday in March 2008

	Aircraft Arrivals and Departures			Seat Arrivals and Departures		
Hour	Arrivals	Departures	Total	Arrivals	Departures	Total
0000-0559	1	1	2	50	30	80
0600-0659		6	6		468	468
0700-0759		5	5		304	304
0800-0859	2	1	3	80	140	220
0900-0959	1	2	3	172	80	252
1000-1059	7	3	10	607	252	859
1100-1159	8	8	16	586	697	1283
1200-1259	5	6	11	500	460	960
1300-1359	3	5	8	236	586	822
1400-1459	2	3	5	262	224	486
1500-1559	5	3	8	394	294	688
1600-1659	3	4	7	280	310	590
1700-1759	5	3	8	408	224	632
1800-1859	0	4	4	0	378	378
1900-1959	6	1	7	496	136	632
2000-2059	2	1	3	190	30	220
2100-2159	2	1	3	80	50	130
2200-2259	3		3	244		244
2300-2359	2		2	80		80
Total	57	57	114	4665	4663	9328
Peak	8	8	16	607	697	1283
Peak 60 Minutes	9	9	17	820	884	1286
Peak Time	1050-1150	1115-1215	1050-1150	1050-1150	1115-1215	1050-1150

Sources: Official Airline Guide as compiled by BACK Aviation Solutions and HNTB analysis

3.3-6 Assumptions

This section describes the general forecast assumptions that were applied in this forecast. More detailed assumptions specific to a particular activity category are described in the sections pertaining to those categories. The major assumptions are described below.

3.3-7 Unconstrained Forecasts

The activity forecasts contained herein are physically unconstrained. For the purposes of this study, "physically unconstrained" means that there are sufficient airport airfield, terminal, and landside facilities at PSP to accommodate all commercial aviation activity dictated by demand. It is assumed that destination airports will be developed sufficiently to accommodate demand from the Palm Springs area.

3.3-8 Regulatory Assumptions

This forecast assumes there will not be a return to any airline regulation which was in place prior to 1979. This means airlines will add or change fares and increase or decrease service depending on market conditions. The forecast also assumes there will not be any airport-specific regulatory constraints, such as noise restrictions.

3.3-9 Other Regional Airports

The other airports in the area are Bob Hope Airport (BUR), Los Angeles International (LAX), Long Beach Airport (LGB), Ontario International Airport (ONT), Palmdale Airport (PMD), San Bernardino International Airport (SBD), and John Wayne Airport (SNA). Currently PSP is served mainly by legacy carriers and their alliance groups, and it is assumed that they will be the primary providers of air service at PSP. While scheduled service may be introduced or reintroduced to PMD and SBD, it is assumed the service levels will not be sufficient to materially affect demand at PSP. All of the regional airports in the region are assumed to serve their current roles, with no new commercial passenger airports added in Southern California.

3.3-10 Economic Assumptions

Demographic and economic growth in the region is assumed to be consistent with the projections contained in **Section 3.2** including the adjustments for the current recession.

3.3-11 Assumptions for Tourism and Other Developments in the Coachella Valley

The Coachella valley is a popular tourist destination, and the current investment of billions of dollars into the tourist economy with more hotel rooms and resort destinations is assumed to continue. Consequently, it is assumed that there will be sufficient visitor accommodations to accommodate demand.

3.3-12 Future Security Environment

Security issues related to air travel have changed, and will continue to change, as new security procedures and technology are incorporated to improve airport security. Events that may affect traveler confidence in airport security or air travel security cannot be predicted. It is assumed that there will be no terrorist attacks during the forecast period that will affect confidence in the aviation system to the same extent as 9/11. It is also assumed that the Transportation Security Administration (TSA) and associated security costs and requirements will continue through the forecast period.

3.3-13 International Political Environment

No major international conflicts that would disrupt aviation in the Palm Springs area are assumed. Likewise, no major trade wars or embargoes that would restrict the international flow of commerce and travel are assumed.

3.3-14 Fuel Assumptions

Fuel Prices have risen precipitously in the last year, much higher than the FAA's fiscal 2008-2025 Aerospace Forecast, before dropping after the financial crisis that occurred during the 2nd half of 2008. Most airlines hedged their fuel prices during the high price period, and thus, they have not been able to take immediate advantage of the drop in fuel prices.

The U.S. Department of Energy (DOE) recently updated its forecasts of oil and jet fuel prices to incorporate the latest trends. The revised forecasts show a short-term decline in fuel prices reflecting the reduced demand during the recession but show an substantial increase in the long-run. After 2015, fuel costs are expected to be more than 50 percent higher than had been projected last year (see **Table 3-16**). It is assumed that future fuel prices will rise in accordance with the DOE projections.

3.3-15 Fares and Yield

Fares and Yields (airline revenue per passenger mile) are very sensitive to fuel prices. With the spike in oil prices last year they rose higher than expected, but may well fall now that fuel costs and demand have declined. Updated FAA forecasts incorporating the revised fuel price projections were not yet available at the time of this forecasting. Therefore an adjustment was made to the existing FAA yield forecasts to incorporate the revised DOE price estimates (see **Table 3-16**).

3.3-16 Environmental Factors

No major changes in the physical environment are assumed. It is assumed that global climate changes will not be sufficient enough to force restrictions on the burning of hydrocarbons or major fuel tax increases within the forecast period.

3.3-17 Long Term Developments in Aircraft Design

New aircraft during the forecast period are assumed to reflect improvements in current technology rather than radical changes in design. The next generation of narrow-body aircraft may exhibit moderate increases in wing-span, continuing an ongoing trend.

3.3-18 General Aviation

It is recommended that GA forecast assumptions at PSP mirror the national trends for GA outlined in the FAA's fiscal 2008-2025 Aerospace Forecast with an adjustment for the revised DOE fuel price forecast. Under this scenario it is assumed that business/corporate activity in the GA sector will continue to increase at a faster pace than the personal/sport use over the forecast period. This emphasis on the corporate side will have the effect of increasing demand for very light jets (VLJ's). The FAA's forecast reflects an industry belief that relatively inexpensive twin engine VLJ's will be able to, at some point, facilitate an expansion of on-demand air taxi business service.

Table 3-16

Impact of Jet Fuel Prices on Cost of Air Travel

	Jet Fuel Costs (cents per gallon)			**Jet Fuel Costs per Revenue Passenger Mile (cents) (c)**					
Year	**2008 DOE Forecast (a)**	**2009 DOE Forecast (b)**	**Difference (percent)**	**2008 DOE Forecast**	**2009 DOE Forecast**	**Difference**	**Difference Adjusted for Fuel Efficiency (d)**	**FAA Undajusted Yield (e)**	**FAA Adjusted Yield (f)**
2006	205.8	205.8	0.0%	3.99	3.99	0.00		13.53	13.53
2007	208.2	217.3	4.4%	4.08	4.08	0.00		13.35	13.35
2008	218.4	297.5	36.2%	4.28	5.59	1.31		13.45	13.45
2009	225.8	197.4	-12.6%	4.43	3.71	-0.72	-0.71		
2010	218.8	203.5	-7.0%	4.29	3.82	-0.47	-0.46		
2011	215.1	225.7	4.9%	4.22	4.24	0.02	0.02		
2012	204.3	245.5	20.1%	4.00	4.61	0.60	0.58		
2013	195.4	255.0	30.5%	3.83	4.79	0.96	0.91	12.89	13.81
2014	190.7	277.5	45.5%	3.74	5.21	1.47	1.39		
2015	182.6	286.2	56.7%	3.58	5.37	1.80	1.67		
2018						1.88	1.70	12.38	14.08
2020	184.2	295.5	60.5%	3.61	5.55	1.94	1.72		
2023						1.93	1.66	11.87	13.53
2025	196.3	307.2	56.5%	3.85	5.77	1.92	1.62		
2028						1.99	1.63	11.37	13.00
2030	213.3	331.3	55.3%	4.18	6.22	2.04	1.64		
				Compounded Average Annual Growth Rate					
2008-2030	-0.1%	0.5%		-0.1%	0.5%	2.0%			
2008-2028								-0.8%	-0.2%

(a) US Department of Energy, Energy Information Administration, Annual Energy Outlook 2008.
(b) US Department of Energy, Energy Information Administration, Annual Energy Outlook 2009, early release.
(c) Jet fuel costs per passenger mile for 2006 and 2007 from Air Transport Association. Assumed to increase at same rate as DOE forecasts for jet fuel.
(d) Difference in jet fuel costs per passenger mile adjusted downward based on estimated 1 percent per year increase in fuel efficiency.
(e) Table 3.17.
(f) Unadjusted FAA yield forecast with differcence in jet fuel cost per RPM adjusted for fuel efficiency added.

Souces: As noted and HNTB analysis.

3.4 DOMESTIC SCHEDULED PASSENGER SERVICE FORECAST

3.4-1 Introduction

This section describes the domestic passenger forecast for PSP. This section includes a discussion of assumptions and data sources, the methodology for the passenger originations forecast, and the assumptions used to determine potential new markets. This section also includes a discussion of the projections of enplanements, load factor, new markets served, seat departures, and aircraft operations.

3.4-2 Methodology, Assumptions, and Data Sources

Following is a summary of the methodology used in the domestic passenger forecast:

1. Determine drivers of passenger activity in the Palm Springs Coachella Valley area.
2. Project future domestic passenger originations at PSP using regression analysis.
3. Estimate future ratio of enplanements to originations.
4. Project enplanements.
5. Project load factors.
6. Project scheduled seat departures.
7. Forecast new domestic non-stop markets.
8. Estimate the most likely way that airlines would accommodate the seat departure forecast in terms of aircraft type and frequency of service.
9. Convert the outbound passenger forecast to enplanements using PSP enplanement data.
10. Convert the scheduled aircraft departure forecast to actual departures using historical departure completion data.

The methodology will be described in greater detail below.

The following data sources were used in the analysis:

- Historical and projected information on population, employment were obtained from the Southern California Association of Governments (SCAG) for Riverside County. Historical and projected information on population, employment and real income for the United States were obtained from the Regional Economic Information System (REIS) developed by the Bureau of Economic Analysis (BEA) in the U.S. Department of Commerce.
- The USDOT OD1A domestic O&D data base was used to obtain yield (airline revenue per passenger mile) and distance and historical originating traffic.
- The USDOT T-100 data base was used to obtain outbound passengers on a market-by-market basis.
- Official Airline Guide (OAG) information on scheduled operations was used to determine existing scheduled service and historical non-stop service.

- The OAG, JP Fleet Airline-Fleets International, and individual airline websites were used to determine aircraft seat configurations for each airline.
- JP Fleet Airline-Fleets International and other industry publications were used to identify information on airline fleet orders.

3.4-3 Yield and Fare Projections

Since passenger originations are local, they are sensitive to local economic factors such as population, employment, and income, and also to airline factors such as air carrier service levels and fares. Therefore, the critical assumptions for this analysis include the use of the growth rates in Section 3.2 for socioeconomic data and on assumptions regarding future yield (revenue per passenger mile) and fare levels.

Table 3-17 presents historical and projected fares and yields for PSP and potential competing airports in the Southern California area. **Appendix B** provides more detailed data for PSP and the competing Southern California airports. Real yield (constant 2007 dollars) at PSP was assumed to change at the FAA national-projected rate after adjustment.[11] Projected real fares were calculated from the FAA's projections of real yield (weighted average air carrier and regional carrier yields) and average trip distance and include estimated taxes and fees.[12] Since the FAA projects average trip distance to increase, real fares are projected to continue to increase after 2015 in contrast to real yield which is expected to decline after 2015.

Yields and fares at PSP are currently higher than the U.S. average. It is anticipated that the higher-cost structure of most carriers operating at PSP, and the smaller average aircraft size, will inhibit yields and fares from falling at a faster rate than the national average. As shown in **Table 3-17**, real fares (including taxes and fees) at PSP are projected to increase to $230.79 by 2028.

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[11] (FAA Aerospace Forecasts: Fiscal Years 2008-2025). See Table 3-16 for adjustment

[12] It was assumed that taxes and fees, as a proportion (%) of total fare, would remain at their 2008 levels over the forecast period.

Table 3-17

Projected Fares at PSP, BUR, LAX, LGB, ONT, PMD, SBD, and SNA
(2007 Prices)

									FAA Forecasts (b)													
	Average Fare (w/ Taxes & Fees) (a)								US Yield				US Trip Length			US Average Fare (e)				US Enplanements		
Year	PSP	BUR	LAX	LGB	ONT	PMD	SBD	SNA	Mainline	Regional	Average (c)	Adjusted (d)	Mainline	Regional	Average (c)	Mainline	Regional	Average (f)	Adjusted (g)	Mainline	Regional	Total
1990	$ 281.49	$ 145.55	$ 250.70	$ 205.27	$ 195.68	$ 211.72	$ -	$ 246.42														
1991	$ 264.45	$ 118.24	$ 230.89	$ 155.46	$ 170.58	$ 247.13	$ -	$ 221.68														
1992	$ 261.09	$ 117.86	$ 217.60	$ 168.97	$ 163.24	$ 299.35	$ -	$ 222.11														
1993	$ 271.96	$ 112.67	$ 228.57	$ 178.14	$ 165.04	$ 295.71	$ -	$ 233.74														
1994	$ 256.09	$ 103.42	$ 210.84	$ 150.66	$ 150.42	$ 301.38	$ -	$ 208.32														
1995	$ 241.02	$ 102.31	$ 200.88	$ 140.85	$ 145.25	$ 150.64	$ -	$ 200.29														
1996	$ 223.31	$ 103.59	$ 187.08	$ 115.98	$ 137.55	$ 139.02	$ -	$ 190.28														
1997	$ 220.60	$ 107.84	$ 197.92	$ 134.30	$ 141.81	$ 248.50	$ -	$ 189.87														
1998	$ 227.80	$ 109.69	$ 208.53	$ 182.65	$ 149.23	$ 303.01	$ 37.02	$ 206.35														
1999	$ 224.61	$ 114.39	$ 206.54	$ 205.00	$ 153.31	$ -	$ 42.14	$ 206.21														
2000	$ 222.85	$ 119.62	$ 216.51	$ 199.80	$ 157.98	$ -	$ -	$ 213.82	16.87	36.41	17.74		872.6	286.5	799.7	$147.21	$104.31	$141.88		561.50	79.70	641.20
2001	$ 210.75	$ 113.98	$ 197.60	$ 192.57	$ 145.08	$ -	$ -	$ 192.15	15.76	36.87	16.77		886.7	302.1	811.6	$139.74	$111.38	$136.10		545.40	80.40	625.80
2002	$ 205.94	$ 117.44	$ 193.91	$ 182.21	$ 141.43	$ -	$ -	$ 172.65	13.91	31.55	15.02		911.8	336.3	823.1	$126.83	$106.10	$123.64		486.50	88.60	575.10
2003	$ 186.48	$ 120.25	$ 188.00	$ 156.30	$ 140.40	$ -	$ -	$ 165.39	13.54	28.86	14.76		939.1	373.9	838.1	$127.15	$107.91	$123.72		482.80	105.00	587.80
2004	$ 184.23	$ 120.76	$ 176.07	$ 146.46	$ 139.93	$ 118.04	$ -	$ 157.79	12.62	26.28	13.93		972.0	410.9	859.6	$122.67	$107.98	$119.73		502.60	125.90	628.50
2005	$ 193.92	$ 129.36	$ 183.01	$ 148.89	$ 146.27	$ 115.10	$ -	$ 162.54	12.06	20.87	13.03		981.5	434.7	861.9	$118.37	$90.72	$112.32		523.00	146.40	669.40
2006	$ 208.15	$ 140.20	$ 194.30	$ 156.80	$ 156.48	$ 111.78	$ -	$ 173.59	12.62	20.34	13.53		995.4	450.4	871.3	$125.62	$91.61	$117.88		516.30	152.20	668.50
2007	$ 200.20	$ 135.93	$ 194.81	$ 152.56	$ 154.65	$ 169.35	$ -	$ 168.41	12.45	20.12	13.35		992.8	450.9	870.4	$123.60	$90.72	$116.18		533.80	155.70	689.50
2008	$ 200.96	$ 136.44	$ 195.57	$ 153.14	$ 156.49	$ 169.99	$ -	$ 169.05	12.51	20.37	13.45	13.45	989.1	455.3	867.2	$123.74	$92.74	$116.66	$116.66	537.30	159.00	696.30
2013	$ 210.71	$ 142.99	$ 205.21	$ 160.61	$ 164.00	$ 178.24	$ -	$ 177.25	12.06	18.09	12.89	13.81	1,006.4	516.2	889.5	$121.37	$93.38	$114.70	$122.81	618.80	193.80	812.60
2018	$ 223.43	$ 151.53	$ 217.80	$ 170.37	$ 173.80	$ 189.00	$ -	$ 187.94	11.66	16.28	12.38	14.08	1,047.1	577.0	929.2	$122.09	$93.94	$115.03	$130.85	699.40	234.10	933.50
2023	$ 226.99	$ 153.93	$ 221.32	$ 173.10	$ 176.54	$ 192.01	$ -	$ 190.94	11.27	14.80	11.87	13.53	1,106.7	637.9	983.8	$124.73	$94.41	$116.78	$133.09	783.40	278.40	1,061.80
2028	$ 230.79	$ 156.48	$ 225.08	$ 176.01	$ 179.47	$ 195.22	$ -	$ 194.13	10.89	13.45	11.37	13.00	1,169.7	705.2	1,042.5	$127.42	$94.89	$118.50	$135.49	877.49	331.08	1,208.57

(a) Historical data from Table 10 and Appendix B. Future fares projected to increase at FAA forecast rate adjusted for changes in jet fuel price forecasts. Assumes taxes and fees remain constant in real prices.
(b) FAA forecast data from FAA Aerospace Forecasts: Fiscal Years 2008-2025.
(c) Average weighted by number of enplanements in each category.
(d) Adjusted yield forecast from Table 3.16.
(e) Estimated by multiplying yield by trip length.
(f) Average weighted by number of enplanements in each category.
(g) Estimated by adjusting original fare estimate by ratio of adjusted yield to original yield.

Sources: USDOT Origin-Destination Survey as compiled by Data Base Products and HNTB analysis.

3.4-4 Passenger Originations Forecast

This section presents the forecast of domestic passenger originations. It includes a discussion of the projection of total domestic PSP originations, and the distribution of projected originations by resident and visitor.

Passenger originations were projected using regression analysis. Regression analysis is a statistical method of generating an equation (or model) which best explains the historical relationship among selected variables, such as O&D passengers and real income. If it is assumed that the model that best explains historical activity will continue to hold into the future, this equation can be used as a forecasting equation. Using historical (1990-2006) data, several passenger origination forecasting models were tested. The potential driving factors tested included socioeconomic variables, aviation industry variables, and instrument variables (also called dummy variables). The socioeconomic variables included population, employment, income, and per capita income for the two service area definitions (see Section 3.2). The aviation industry variables included fares and yields at PSP and competing airports in Southern California. Instrument variables representing the first Gulf War, the presence or absence of scheduled service by low-fare carriers, and the September 11 attacks and ensuing industry recovery were also tested. The model was tested in both linear and logarithmic formulations. Separate equations were prepared for resident and non-resident (visitor) originations.

Several of the resident and visitor equations that were calculated showed strong correlations with passenger originations.

The model that produced the best results for resident originations, from both a theoretical and statistical standpoint, was a logarithmic formulation, which specified PSP resident originations as a function of real income in Riverside County, average fares at PSP (including taxes and fees) and average yields at Ontario as independent variables. Also included were instrument variables representing low-fare service by Air 21 in 1996 and 1997, the 9/11 attacks in 2001 and a partial recovery in 2005. The regression equation took the following form:

$$\text{BASE} = (10^{-0.59977}) \text{ x } \text{INCR}^{1.04796} \text{ x } \text{FAREPSP}^{-1.24983} \text{ x } \text{YIELDO}^{0.82377} \text{ x } \text{DA21}^{0.0696} \text{ x } \text{D2001}^{-.06812} \text{ x } \text{D2005}^{0.4342}$$

Where:

BASE = domestic resident originations
INCR = income in Riverside County (thousands of 2007 dollars)
FAREPSP = PSP air fare adjusted for taxes and fees in 2007 dollars
YIELDO = ONT yield adjusted for taxes and fees in 2007 dollars
DA21 = dummy variable representing service by a low-fare carrier (Air 21) in 1996 and 1997.
D2001 = Dummy variable for 9/11 impacts in 2001 and after.
D2005 = Dummy variable for 9/11 partial recovery in 2005 and after.

R^2 = .993
F-statistic = 249.00
Durbin-Watson = 2.50

t-statistics:
Intercept = -0.34
INCR = 6.08
FAREPSP = -3.94
YIELDO = 3.03
DA21 = 5.46
D2001 = -3.91
D2005 = 2.72

The county income variable represents the size of the market, and the PSP fare variable represents the cost of the service. The ONT yield variable represents the cost of competing service. Since the forecasting model has a logarithmic formulation, each of the exponents associated with the input variables is an elasticity. With small changes in the input variables, the forecasting model can be interpreted as indicating that every 1.0 percent increase in county income will increase resident originations by approximately 1.05 percent, that every 1.0 percent decrease in PSP fares will increase originations by approximately 1.25 percent, and that every 1.0 percent decrease in ONT yields will decrease PSP resident passengers by 0.82 percent.

The model that produced the best results for non-resident originations was a logarithmic formulation, which specified PSP visitor originations as a function of real income in the United States, average fares at PSP (including taxes and fees) and average fares at Ontario as independent variables. Also included were instrument variables representing low-fare service by Air 21 in 1996 and 1997, and the 9/11 attacks in 2001. The regression equation took the following form:

$$REF = (10^{-5.68242}) \text{ x } INCU^{1.1882} \text{ x } FAREPSP^{-0.86612} \text{ x } FAREO^{0.81135} \text{ x } DA21^{0.04914} \text{ x } D2001^{-.07456}$$

Where:
REF = domestic non-resident originations
INCU = income in United States (thousands of 2007 dollars)
FAREPSP = PSP air fare adjusted for taxes and fees in 2007 dollars
FAREO = ONT air fare adjusted for taxes and fees in 2007 dollars
DA21 = dummy variable representing service by a low-fare carrier (Air 21) in 1996 and 1997.
D2001 = Dummy variable for 9/11 impacts in 2001 and after.

R^2 = .973
F-statistic = 79.27
Durbin-Watson = 1.99
t-statistics:
Intercept = -2.53
INCU = 6.58
FAREPSP = -2.85
FAREO = 4.01
DA21 = 3.02
D2001 = -4.46

Projections of the input variables are necessary to use the forecasting equation. Specifically, income projections were obtained from **Table 3-5** and fare and yield projections from **Table 3-17** and **Appendix B**.

In 2008, the twin impacts of the fuel price spike and financial crisis led airlines to reduce capacity at PSP and elsewhere in the nation, well below the levels that would normally be dictated by demand. Initial indications are that there will be additional reductions in capacity in 2009. At this time there are no indications that airlines are willing or able to acquire the aircraft needed to restore the capacity cuts and add to growth in the short term. For this reason, a lag period was assumed before new air service would allow passenger activity to return to levels dictated by the demand equations. It was conservatively assumed that the lag would not be eliminated until 2018.

Table 3-18 shows the forecasts of scheduled passenger originations using the equations presented above. As shown, total scheduled PSP originations are projected to rise from 1.3 million in 2008 to 2.3 million in 2028, an average annual increase of 2.86 percent. This growth rate is about the same as that experienced since 1990 (2.85 percent). Very little change is projected in the distribution of originating passengers between residents and visitors.

There are several assumptions implicit in the passenger origination forecasts:

- The historical relationship between originations, income, and fares will continue throughout the forecast period. Forces that could disrupt this relationship, such as a return to regulation, severe congestion at destination airports, or the wide-scale use of teleconferencing as a travel alternative, could alter this relationship.
- New airline alliances, should they develop, will likely be restricted to code-sharing and joint frequent flyer programs, and will not change the level of airline competition at the Airport.
- Fuel prices will gradually increase over the forecast period, but after 2015 real yields will resume their decline as a result of more efficient aircraft biofuel alternatives, and more productive airline labor and management.
- Real income in Riverside County and the U.S. will grow at the rates projected in **Table 3-6**.
- The population's distribution of income through the forecast period will be similar to what it is today.
- As a percentage of income, taxes and medical expenses, which are the principal budget items over which households have little control, will not increase sufficiently to affect household or business budgets devoted to air travel.

Table 3-18

Forecast of Domestic Origin/Destination Traffic from Base and Reference at PSP

	Real Income ($000s) (a)		Average Fare (w/ Taxes & Fees) (b)					
Year	Riverside County	United States	PSP	ONT	ONT Real Yield w/ Fees (c)	Domestic O&D Passengers Initiated from Base (d)	Domestic O&D Passengers Initiated from Reference (d)	Total O&D Passengers
1990	$32,607,717	$7,102,891,197	$ 281.49	$ 195.68	$ 19.31	189,380	580,780	781,090
1991	$32,151,289	$7,094,202,541	$ 264.45	$ 170.58	$ 17.68	178,400	547,590	737,020
1992	$32,643,172	$7,330,034,813	$ 261.09	$ 163.24	$ 16.22	180,920	548,350	740,550
1993	$32,793,504	$7,430,920,889	$ 271.96	$ 165.04	$ 17.57	184,500	532,240	726,250
1994	$33,133,357	$7,652,454,765	$ 256.09	$ 150.42	$ 16.78	190,380	553,230	755,800
1995	$33,659,051	$7,890,929,888	$ 241.02	$ 145.25	$ 16.20	205,150	588,690	806,140
1996	$34,652,883	$8,187,058,361	$ 223.31	$ 137.55	$ 15.08	251,740	683,240	947,440
1997	$36,221,621	$8,539,476,373	$ 220.60	$ 141.81	$ 15.43	279,550	784,510	1,079,100
1998	$39,319,335	$9,086,403,073	$ 227.80	$ 149.23	$ 16.05	255,770	804,170	1,075,940
1999	$41,084,385	$9,396,192,747	$ 224.61	$ 153.31	$ 16.16	276,660	803,300	1,092,760
2000	$43,529,953	$9,904,443,245	$ 222.85	$ 157.98	$ 16.21	282,880	821,920	1,115,660
2001	$46,046,269	$10,041,010,992	$ 210.75	$ 145.08	$ 14.43	257,320	753,370	1,018,630
2002	$47,714,220	$10,077,635,186	$ 205.94	$ 141.43	$ 13.52	256,160	709,490	973,580
2003	$50,141,387	$10,190,505,245	$ 186.48	$ 140.40	$ 13.35	306,200	802,880	1,118,190
2004	$52,982,707	$10,536,441,805	$ 184.23	$ 139.93	$ 13.24	345,190	859,380	1,214,720
2005	$56,015,119	$10,838,535,953	$ 193.92	$ 146.27	$ 13.54	366,560	879,430	1,256,950
2006	$59,138,390	$11,248,257,992	$ 208.15	$ 156.48	$ 14.59	385,360	929,880	1,326,990
2007	n/a	n/a	$ 200.20	$ 154.65	$ 14.52	391,080	943,970	1,346,930
2008	$63,655,946	$11,743,330,986	n/a	n/a	n/a	375,792	907,069	1,294,276
2013	$73,065,482	$12,643,386,382	$ 210.71	$ 164.00	$ 15.07	449,037	1,029,995	1,492,193
2018	$86,088,756	$14,138,666,719	$ 223.43	$ 173.80	$ 15.29	537,745	1,220,555	1,773,947
2023	$100,720,613	$15,828,431,639	$ 226.99	$ 176.54	$ 14.67	600,650	1,394,392	2,012,795
2028	$116,152,795	$17,749,093,668	$ 230.79	$ 179.47	$ 14.07	660,166	1,596,005	2,276,248
				Average Annual Growth Rate				
(2006-2028)	3.12%	2.09%	0.47%	0.62%	-0.16%	2.48%	2.49%	2.48%
(2008-2028)						2.86%	2.87%	2.86%

(a) Table 3.5 and Table 3.6.
(b) Table 3.17.
(c) Appendix B.
(d) See text for forecasting equation.

Sources: As noted and HNTB analysis.

3.4-5 Projected Domestic Passenger Enplanements

Table 3-19 shows the projection of domestic passenger enplanements at PSP. There is very little connecting activity at the Airport so most domestic enplanements consist of originations. The existing (2007-2008) ratio of domestic enplanements to domestic O&D passengers was assumed to hold into the future. As shown in **Table 3-19**, domestic enplanements are projected to increase from 0.7 million in 2008 to almost 1.3 million in 2028, an average annual increase of 2.93 percent.

3.4-6 Load Factor and Seat Departure Forecast

Table 3-20 provides the forecasts of domestic load factor and scheduled passenger aircraft seat departures.

Over the past several years, the airline industry has experienced a significant increase in the average boarding load factor on both domestic and international flights. The load factor average has increased dramatically, from an average in the mid- to upper-50 percent range in the early 1980s to close to 80 percent nationally in 2008. This growth has been fueled by a strong economy, coupled with strong travel demand and actions by the airlines earlier in the 1990s to remove capacity from their systems and to use sophisticated yield management procedures. Since national load factors have recently been at historically high levels, the FAA does not project them to go significantly higher. Domestic load factors at PSP are assumed to increase at the same rate as in the U.S.

Annual scheduled seat departures for 2014 were estimated by dividing the projections of enplaned passengers by the load factor projections.

Table 3-19

Forecast of Domestic Passenger Enplanements

Year	Domestic O&D Passengers (a)	Ratio of Enplanements to O&D (b)	Domestic Enplanements (c)
2007	1,346,930	0.56	755,831
2008	1,294,276	0.55 (d)	706,701 (e)
2013	1,492,193	0.55	826,057
2018	1,773,947	0.55	982,031
2023	2,012,795	0.55	1,114,254
2028	2,276,248	0.55	1,260,098
Average Annual Growth Rate			
(2008-2028)	2.86%	0.07%	2.93%

(a) Table 3.18.

(b) Ratio of domestic enplanements to O&D passengers. Assumed to remain constant at 2007-2008 average

(c) Table 3.9 for historical data. O&D multiplied by ratio of enplanements to O&D for forecast.

Sources: As noted and HNTB analysis.

Table 3-20

Forecast of Domestic Load Factor and Scheduled Seat Departures

Year	Enplanements (a)	Load Factor U.S. (b)	 PSP (c)	Scheduled Seat Departures (d)
2007	755,831	79.8%	74.7%	1,012,183
2008	706,701	79.8%	74.6%	946,811
2013	826,057	80.6%	75.4%	1,095,734
2018	982,031	80.7%	75.5%	1,301,015
2023	1,114,254	81.3%	76.0%	1,465,292
2028	1,260,098	82.1%	76.7%	1,641,936

(a) Table 3.19.

(b) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025. Value for 2028 extrapolated from 2023-2025 growth rate.

(c) Existing 2008 load factor calculated by dividing enplanements by scheduled seat departures. Future load factors assumed to increase at FAA projected rate from 2008 levels.

(d) Seat departures for 2007 and 2008 from Official Airline Guide. Projected 2013 to 2028 seat departures estimated by dividing projected enplanements by projected PSP load factor.

Sources: As noted and HNTB analysis.

3.4-7 New Non-Stop Markets

Translating the enplanement forecast into an aircraft operations forecast requires an assessment of the future fleet mix, and the future fleet in turn is, in part, dependent on the markets that will be served. Separate analyses were performed for airline hubs and non-airline hubs.

Candidate airline hubs for non-stop air carrier service were determined by identifying the current thresholds of total revenue (passengers multiplied by average fare) that justified non-stop service to each hub. A market's total revenue includes revenue from both originating and potential connecting passengers and is therefore a better measure of the market's value to an airline than just originating revenue. At each candidate airline hub the calculation was performed for spoke markets at distances that corresponded to PSP's distance from that hub. Thresholds are lower for nearby markets than more distant markets because service can be offered with smaller aircraft and because there is less competition from connecting hubs between the two markets. Thresholds of revenue necessary to justify non-stop service were estimated using the average of revenue in the smallest market with non-stop service and the largest market without non-stop service in the comparable range that corresponded to PSP. These thresholds are in large part determined by aircraft capabilities. For example, there is a big jump in the threshold above 1200 miles because that is beyond the capability of most regional jets. Therefore, these more distant markets would need to be large enough to justify mainline aircraft. For the purpose of this analysis, non-stop service was defined as at least 125 non-stop departures per year, which corresponds to five flights a week for six months a year.

A similar approach was used to estimate the revenue threshold for potential non-hub markets in the Western U.S. The estimated service thresholds for both hub and non-hub markets are presented in **Table 3-21**.

Table 3-22 shows the projection of the most probable new non-stop hub markets for PSP. Based on the analysis, airline revenue at PSP would grow sufficiently to exceed the service threshold for ATL between 2013 and 2018 and IAH between 2018 and 2023. PSP had seasonal non-stop service from each hub for a period in the past. If PSP were to grow significantly faster than projected, it would generate non-stop service from additional hubs, such as JFK, DTW, EWR and CLT. With the exception of the world's two largest hubs – ORD and ATL – the threshold for non-stop service at hubs east of the Mississippi increases substantially because PSP is too distant to be accessible with smaller regional aircraft.

Table 3-23 shows the projection of the most probable new non-hub markets for PSP. Based on the analysis, non-stop service to Reno would be established by 2023. With slightly more rapid growth, service to Boise and Spokane could also be established.

Note that the threshold analyses are intended to estimate the likelihood of *regular* non-stop service to the markets identified in **Tables 3-22** and **Table 3-23**. Less frequent service to additional markets is not precluded by the analysis. This could include service during the peak three months in winter, or alternatively on a weekend basis, to markets such as New York, Washington, Detroit, Charlotte, Philadelphia and Boston, as well as Boise and Spokane.

Table 3-24 shows the estimated distribution of scheduled seat departures among current non-stop markets and estimated new non-stop markets.

Table 3-21

Gross Airline Revenue Thresholds for Non-Stop Service by Airline Hub for Markets at Distances Comparable to PSP

Airport	Hub Airline	PSP Distance	Comparable Range		Served Markets (a)		UnServed Markets (b)		Revenue Threshold for Non-Stop Service (c)
			Low	High	Min Rev	Max Rank	Max Rev	Min Rank	
					Airline Hub Airports				
LAX	UA	110	-	200	IYK - $393,800	2	AZA - $994,800	4	$ 694,300
PHX	US	261	200	400	CDC - $64,200	2	ROW - $477,100	3	$ 270,650
SFO	UA	421	300	500	CEC - $209,000	2	OTH - $612,200	3	$ 410,600
SLC	DL	541	400	600	LWS - $1,097,000	2	FLG - $788,700	2	$ 942,850
DEN	UA	776	700	900	MSO - $5,531,700	2	GRK - $3,704,900	2	$ 4,618,300
PDX	AS	873	800	1,000	SBA - $7,333,500	1	ASE - $4,505,500	2	$ 5,919,500
SEA	AS	987	900	1,100	SBA - $7,333,500	3	ASE - $4,505,500	2	$ 5,919,500
DFW	AA	1126	1,000	1,200	FNT - $7,018,700	2	CAK - $8,555,400	2	$ 7,787,050
IAH	CO	1269	1,200	1,400	ORF - $27,661,200	2	BIL - $7,575,900	2	$ 17,618,550
MSP	DL	1454	1,400	1,600	PSP - $11,860,500	2	EUG - $6,010,400	2	$ 8,935,450
STL	AA	1493	1,400	1,600	LAS - $216,673,500	1	RNO - $28,081,300	3	$ 122,377,400
MEM	DL	1513	1,500	2,000	SAN - $122,169,400	13	PDX - $86,081,700	1	$ 104,125,550
ORD	AA, UA	1652	1,500	2,000	PSP - $11,860,500	1	FAT - $10,295,900	3	$ 11,078,200
CVG	DL	1800	1,500	2,000	SNA - $66,876,500	1	SMF - $64,423,900	2	$ 65,650,200
ATL	DL	1840	1,500	2,000	STT - $11,364,900	1	GEG - $22,187,400	2	$ 16,776,150
DTW	DL	1886	1,500	2,000	SJU - $52,106,300	1	TUS - $30,287,600	4	$ 41,196,950
CLE	CO	1957	1,500	2,000	SLC - $80,131,300	1	PDX - $86,081,700	1	$ 83,106,500
CLT	US	2021	1,500	2,000	STT - $11,364,900	1	PDX - $86,081,700	1	$ 48,723,300
IAD	UA	2188	2,000	2,500	SMF - $64,423,900	3	ANC - $38,070,300	3	$ 51,247,100
MIA	AA	2232	2,000	2,500	LAS - $216,673,500	2	RNO - $28,081,300	6	$ 122,377,400
PHL	US	2303	2,000	2,500	PDX - $86,081,700	2	SMF - $64,423,900	2	$ 75,252,800
EWR	CO	2358	2,000	2,500	TUS - $30,287,600	1	SMF - $64,423,900	1	$ 47,355,750
JFK	B6	2378	2,000	2,500	TUS - $30,287,600	2	RNO - $28,081,300	2	$ 29,184,450
BOS	B6	2517	2,000	2,500	SLC - $80,131,300	1	ANC - $38,070,300	2	$ 59,100,800
					Regional Non-Hub Airports				
					SMF- $64,423,850		RNO - $28,081,308		$ 46,252,579

(a) Smallest revenue market in comparable distance band served by at least 250 annual non-stop departures from airline hub.

(b) Largest revenue market in comparable distance band serviced by less the 250 annual non-stop departures from airline hub.

(c) Average of smallest revenue market with non-stop service and largest revenue market without non-stop service.

Sources: As noted and HNTB analysis.

Table 3-22

Forecast of New Domestic Non-Stop Markets at PSP

		2007	2013	2018	2023	2028
PSP Domestic O&D (a)		1,346,930	1,492,193	1,773,947	2,012,795	2,276,248
PSP Average Fares (b)		$ 171.17	$ 180.95	$ 192.78	$ 196.09	$ 199.62
PSP Airline Outbound Passenger Revenue (c)		$ 11,860,500	$ 13,500,289	$ 17,099,102	$ 19,734,587	$ 22,719,513
Potential Market	Revenue Threshold (d)					
		Hub Airports				
LAX	$ 694,300	Existing	Existing	Existing	Existing	Existing
PHX	$ 270,650	Existing	Existing	Existing	Existing	Existing
SFO	$ 410,600	Existing	Existing	Existing	Existing	Existing
SLC	$ 942,850	Existing	Existing	Existing	Existing	Existing
DEN	$ 4,618,300	Existing	Existing	Existing	Existing	Existing
PDX	$ 5,919,500	Existing	Existing	Existing	Existing	Existing
SEA	$ 5,919,500	Existing	Existing	Existing	Existing	Existing
DFW	$ 7,787,050	Existing	Existing	Existing	Existing	Existing
IAH	$ 17,618,550	Existing			New	New
MSP	$ 8,935,450	Existing	Existing	Existing	Existing	Existing
STL	$ 122,377,400					
MEM	$ 104,125,550					
ORD	$ 11,078,200	Existing	Existing	Existing	Existing	Existing
CVG	$ 65,650,200					
ATL	$ 16,776,150			New	New	New
DTW	$ 41,196,950					
CLE	$ 83,106,500					
CLT	$ 48,723,300					
IAD	$ 51,247,100					
MIA	$ 122,377,400					
PHL	$ 75,252,800					
EWR	$ 47,355,750					
JFK	$ 29,184,450					
BOS	$ 59,100,800					

(a) Table 3.19.
(b) Table B.1 in Appendix B. Fares not including taxes and fees.
(c) Passenger O&D traffic multiplied by average fare and divided by two to represent outbound passenger revenue.
(d) Table 3.21.

Sources: As noted and HNTB analysis.

Table 3-23

Forecast of New Domestic Non-Hub Non-Stop Markets at PSP

	2007	2013	2018	2023	2028
PSP Domestic O&D (a)	1,346,930	1,492,193	1,773,947	2,012,795	2,276,248
PSP Average Fares (b)	$ 171.17	$ 180.95	$ 192.78	$ 196.09	$ 199.62
PSP Airline Outbound Passenger Revenue (c)	$ 11,860,500	$ 13,500,289	$ 17,099,102	$ 19,734,587	$ 22,719,513

Projected Gross Airline Revenue at Non -Hub Airports (d)

	Revenue Threshold (e)	2007	2013	2018	2023	2028
SMF	$ 46,252,579	$ 64,423,850	$ 73,330,855	$ 92,878,885	$ 107,194,308	$ 123,407,822
RNO	$ 46,252,579	$ 28,081,308	$ 31,963,727	$ 40,484,395	$ 46,724,255	$ 53,791,462
GEG	$ 46,252,579	$ 22,187,365	$ 25,254,909	$ 31,987,187	$ 36,917,372	$ 42,501,254
BOI	$ 46,252,579	$ 20,125,506	$ 22,907,985	$ 29,014,636	$ 33,486,662	$ 38,551,637

Projected Non-Stop Service (f)

	Revenue Threshold (e)	2007	2013	2018	2023	2028
SMF	Existing	Existing	Existing	Existing	Existing	Existing
RNO					New	New
GEG						
BOI						

(a) Table 3.19.

(b) Table B.1 in Appendix B. Fares not including taxes and fees.

(c) Passenger O&D traffic multiplied by average fare and divided by two to represent outbound passenger revenue.

(d) Assumed to increase at same rate as PSP airline revenue.

(e) Table 3.21.

(f) Non-stop service assumed when and if markets exceed revenue threshold.

Sources: As noted and HNTB analysis.

Table 3-24

Forecast of Scheduled Domestic Seat Departures by Market

	2007	**2008**	**2013**	**2018**	**2023**	**2028**
Projected Seat Departures (a)	1,012,183	946,811	1,095,734	1,301,015	1,465,292	1,641,936
Existing Markets (b)						
BLI	6,000	15,300	17,707	21,024	23,678	26,533
DEN	74,794	67,972	80,061	93,466	101,465	113,696
DFW	128,660	153,440	180,729	210,991	229,046	256,658
LAS	47,857	39,997	46,288	54,960	61,900	69,362
LAX	100,560	78,080	91,966	107,366	116,553	130,604
MSP	46,380	41,800	49,234	57,478	62,397	69,919
ORD	80,620	62,694	73,844	86,209	93,586	104,868
PDX	38,672	30,106	35,460	41,398	44,940	50,358
PHX	102,306	94,358	111,140	129,749	140,852	157,832
SEA	110,080	103,006	121,326	141,641	153,761	172,297
SFO	169,172	166,244	195,810	228,598	248,159	278,075
SJC	4,060	8,050	9,316	11,062	12,458	13,960
SLC	50,620	45,170	53,203	62,112	67,427	75,556
SMF	26,942	25,620	29,650	35,204	39,650	44,430
New Markets (c)						
ATL	15,360	-		19,757	21,448	24,033
IAH	10,100	14,974			22,352	25,047
RNO					25,620	28,709
Total	1,012,183	946,811	1,095,735	1,301,015	1,465,292	1,641,936

(a) Table 3.20.
(b) Assumed to increase at same rate as total domestic seat departures with prorated downward adjustment among hub markets to ensure that sum of seat departures does not exceed projection in Table 3.20.
(c) Based on historical service or most similar existing market.

Sources: As noted and HNTB analysis.

3.4-8 Air Service Projections

The seat departure projections in **Table 3-24** were translated into projections of scheduled aircraft flights for each market using a set of assumptions regarding airline strategies and available equipment. The service projections are guided by the general assumptions outlined in Section 3.4. Additional, more detailed air service assumptions were developed, as listed below:

- No radical changes in airline strategy for how to serve and compete in markets is assumed.
- The current pattern of airline dominance at other airport hubs and non-hubs is assumed to remain substantially in place.
- No significant additional airline consolidation, aside from Delta's acquisition of Northwest Airlines, is assumed.
- As projected by the FAA and Boeing, airlines will continue to emphasize frequency when adding service to meet demand. This means that domestic service will be provided principally by narrow-body air carrier aircraft and regional jets.
- Relaxation of legacy carrier scope clauses will allow their code-sharing regional partners to add regional jets, as necessary, to meet demand.
- Future fleet additions beyond those presently announced by the airlines are assumed to be consistent with current announced fleet expansion plans and existing acquisitions.
- The smaller older Embraer 120 and Saab 340 turboprop aircraft are assumed to be gradually retired and replaced by newer larger turboprops such as the Bombardier Q400 and the ATR 42-600 series.
- No attempt is made to forecast aircraft types not currently in the planning or development stages.
- No supersonic, hypersonic, or tilt-rotor aircraft are projected because of poor operating economies and potential noise impacts.

Using the above assumptions for guidance, air service scenarios were developed for each market in each forecast year. The scenarios were developed so that the selected aircraft types and frequencies in combination matched the annual seat departure projections for that market. Factors considered in each market included historical service patterns, current dominant carriers, aircraft in place and on order, length of haul, and announced plans of current carriers and new entrants. Individual market scenarios are presented in **Appendix C**.

3.4-9 Domestic Passenger Aircraft Operations Forecast

Table 3-25 presents the forecast of scheduled aircraft departures. The fleet mix was summarized from the individual airline and aircraft estimates in **Appendix C** and then adjusted by the 2007 ratio of completed departures to scheduled departures.

Table 3-25

Domestic Scheduled Passenger Operations Forecast

Year	2007	2008	2013	2018	2023	2028
Scheduled Departures (a)	13,873	12,653	13,874	15,554	16,488	17,486
Completed Departures (b)	14,035	12,801	14,036	15,736	16,681	17,690
Ratio (c)	1.012	1.012	1.012	1.012	1.012	1.012
Completed Operations (d)	28,070	25,602	28,072	31,472	33,362	35,380

(a) Appendix C.

(b) 2007 data from USDOT T100 date base. Future years estimated by multiplying scheduled departures by ratio of completed departures to scheduled departures.

(c) Ratio in 2007 calculated by dividing completed operations by scheduled operations. Assumed to remain constant in future.

(d) Completed departures multiplied by 2.

Sources: As noted and HNTB analysis.

3.5 INTERNATIONAL SCHEDULED PASSENGER FORECAST

This section discusses the international passenger forecasts, including assumptions, methodologies, and results.

3.5-1 Methodology, Assumptions, and Data Sources

The methodology used to develop the international passenger forecasts was essentially a top-down approach. The forecast approach that was used to estimate domestic passenger traffic was not suitable for the international passenger forecast for several reasons. First, O&D data for passengers flying their entire itinerary on foreign-flag carriers is not available; therefore, the historical record is incomplete. Second, many of the international markets are still being developed, so insufficient historical data exists from which to establish trends. These constraints tend to obscure the relationship between traditional drivers of demand, such as income and yield, and international passenger traffic.

A top-down approach provides an opportunity to exploit the research and analysis into international travel conducted by the FAA. The FAA has much greater resources available to investigate the factors driving international demand, and is able to incorporate the findings into their forecasts. The selected top-down approach can be summarized as follows:

1. Identify forecast of U.S. international passenger traffic.
2. Estimate future PSP share of U.S. international passenger traffic.
3. Estimate future load factor and seat departures.
4. Estimate future non-stop markets.
5. Estimate the most probable way that airlines would accommodate the seat departure forecast in terms of aircraft type and scheduled frequency.
6. Convert the scheduled aircraft departure forecast to actual departures using historical departure completion data.

The methodology will be described in greater detail in subsequent sections of this report.

The following data sources were used in the analysis:

1. FAA international passenger and load factor projections.
2. USDOT International Schedule T-100 data base.
3. OAG information on scheduled operations, which was used to identify existing scheduled service.
4. The OAG, and JP Airline-Fleets International guide, which were used to identify aircraft seat configurations for each airline.
5. JP Airline-Fleets International and other industry publications, which were used to gather information on airline fleet orders.

3.5-2 International Passenger Enplanement Forecast

Table 3-26 presents the forecast of international passenger enplanements at PSP. The PSP share of international activity has fluctuated significantly as airlines have added and withdrawn service. The overall long-term trend however, has been for the PSP share of U.S. international traffic to increase at a very slight rate. The increase in U.S. share was applied to the FAA's most recent forecast of international passenger traffic to arrive at a forecast of international passenger enplanements.

As shown, PSP international passenger enplanements are projected to increase to 165,871 by 2028, an average annual increase of almost 4.4 percent.

Table 3-26

Forecast of International Passenger Enplanements

Year	U.S. International Passengers (a)	Ratio of PSP to U.S. Int. Pax (b)	PSP International Enplanements (c)
1990	n/a	n/a	17,480
1991	n/a	n/a	18,423
1992	n/a	n/a	24,047
1993	93,400,000	0.00025	23,131
1994	97,700,000	0.00023	22,355
1995	104,700,000	0.00019	19,492
1996	113,200,000	0.00022	24,341
1997	121,600,000	0.00011	13,489
1998	126,700,000	0.00004	5,373
1999	131,400,000	0.00018	24,020
2000	140,600,000	0.00015	21,168
2001	127,900,000	0.00010	13,024
2002	120,100,000	0.00006	6,860
2003	120,800,000	0.00004	5,163
2004	133,900,000	0.00004	4,731
2005	139,000,000	0.00019	26,671
2006	143,000,000	0.00029	42,074
2007	147,100,000	0.00034	49,715
2008	155,200,000	0.00043	67,355
2013	200,700,000	0.00044	87,844
2018	250,300,000	0.00044	110,479
2023	306,100,000	0.00045	136,241
2028	369,600,000	0.00045	165,871
Average Annual Growth Rate			
(2008-2028)	4.22%	0.16%	4.38%

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.

(b) Historical ratio calculated by dividing US enplanements by PSP international enplanements. Projected ratio assumed to continue to increase at 1990-2007 historical rates.

(c) Data from 1990-2006 estimated based on US DOT T100 data. Data for 2007 and 2008 from Airport records.

Sources: As noted and HNTB analysis.

3.5-3 Projected Load Factor and Seat Departures

Table 3-27 provides the forecasts of international load factor and scheduled passenger aircraft seat departures. After 2008, the international load factor was assumed to change at the same rate as the FAA forecast of international load factor for the United States. International annual scheduled seat departures were estimated by dividing the passenger enplanement forecast by the load factor.

3.5-4 Projected New Non-Stop Markets

Passenger originations and market-specific airline revenue data are not available for foreign-flag carriers. Consequently, the threshold analysis used to estimate new non-stop domestic markets could not be duplicated for international markets.

The likely evolution of international service at PSP was estimated by examining international service at larger, but otherwise similar, markets to PSP. Although Phoenix (PHX) is much larger than Palm Springs, it is similar with regard to its geographic location, climate, and market attractions. Based on PHX's current international service patterns, it appears that the most likely candidate for new international non-stop service at PSP would be Toronto. Although Toronto is considered the most likely international market for regular non-stop service, less frequent service from other markets is not precluded. These markets could include Winnipeg and Montreal in Canada, Mexico City and Guadalajara in Mexico, and even overseas markets such as Tokyo, London, or Paris. In some of these instances, Customs and/or runway facilities would need to be added or expanded to accommodate the demand.

Table 3-28 shows the estimated distribution of scheduled seat departures for scheduled international markets.

Table 3-27

Forecast of International Load Factor and Scheduled Seat Departures

Year	Enplanements (a)	Load Factor U.S. (b)	Load Factor PSP (c)	Scheduled Seat Departures (d)
2007	49,715	80.2%	75.8%	65,557
2008	67,355	80.6%	79.6%	84,651
2013	87,844	81.1%	80.1%	109,721
2018	110,479	81.4%	80.4%	137,484
2023	136,241	81.8%	80.8%	168,714
2028	165,871	82.1%	81.0%	204,780

(a) Table 3.26.

(b) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.

(c) Existing 2008 load factor calculated by dividing enplanements by scheduled seat departures. Future load factors assumed to increase at FAA projected rate from 2008 levels.

(d) Seat departures for 2007 and 2008 from Official Airline Guide. Projected 2013 to 2028 seat departures estimated by dividing projected enplanements by projected PSP load factor.

Sources: As noted and HNTB analysis.

Table 3-28

Forecast of Scheduled International Seat Departures by Market

	2007	2008	2013	2018	2023	2028
Projected Seat Departures (a)	65,557	84,651	109,721	137,484	168,714	204,780
Existing Markets (b)						
YEG	8,160	12,738	16,510	18,771	23,235	28,202
YVR	24,108	27,094	35,118	39,927	49,421	59,986
YYC	33,289	44,819	58,092	66,048	81,752	99,229
New Markets (c)						
YYZ				12,738	14,306	17,364
Total	65,557	84,651	109,721	137,484	168,714	204,780

(a) Table 3.27.

(b) Assumed to increase at same rate as total international seat departures with prorated downward adjustment among markets to ensure that sum of seat departures does not exceed projection in Table 3.27.

(c) Based on historical service or most similar existing market.

Sources: As noted and HNTB analysis.

3.5-5 Air Service Projections and Aircraft Operations Forecast

The procedure used to allocate international passenger activity to airlines and aircraft equipment was similar to that used for the domestic air service projections. The following assumptions were used to guide the process:

- Annual aircraft departures and aircraft types were projected to be consistent with the annual international seat departure forecast in **Table 3-28**.
- No radical changes in airline strategy for how to serve and compete in markets is assumed.
- The current pattern of airline dominance at other airport hubs and gateways is assumed to remain in place.
- Sufficient airport expansion in at international destinations is anticipated to accommodate market demand.
- Future fleet additions beyond those presently announced by the airlines are assumed to be consistent with current announced fleet expansion plans and existing acquisitions.

The fleet mix estimates for each market are outlined in detail in **Appendix C**.

Table 3-29 shows the forecast of international passenger aircraft operations. Total annual operations among international scheduled passenger carriers are projected to increase from 1,210 in 2008 to 2,698 in 2028, an average annual increase of 4.1 percent.

Table 3-29

Scheduled International Passenger Operations Forecast

Year	**2007**	**2008**	**2013**	**2018**	**2023**	**2028**
Scheduled Departures (a)	510	652	830	1,040	1,231	1,455
Completed Departures (b)	473	605	770	965	1,142	1,349
Ratio (c)	0.927	0.927	0.927	0.927	0.927	0.927
Completed Operations (d)	946	1,210	1,540	1,930	2,284	2,698

(a) Appendix C.

(b) 2007 data from USDOT T100 date base. Future years estimated by multiplying scheduled departures by ratio of completed departures to scheduled departures.

(c) Ratio in 2007 calculated by dividing completed operations by scheduled operations. Assumed to remain constant in future.

(d) Completed departures multiplied by 2.

Sources: As noted and HNTB analysis.

3.6 SUMMARY OF PASSENGER ACTIVITY

Table 3-30 combines the domestic and international passenger forecasts and provides peak hour forecasts.

As noted in Section 3.3, PSP experiences a much more profound seasonal distribution of passenger and aircraft activity than most airports. In general, resident travel is fairly evenly distributed throughout the year, whereas visitor travel peaks strongly in winter. Since the two categories are expected to grow at almost equal rates (see **Table 3-18**) no major change in seasonality is anticipated. Therefore, peak month activity, as a percentage of annual activity, is expected to remain unchanged.

Peak hour activity, as a percentage of daily activity is also assumed to remain constant. Peak spreading can, and probably will, occur at some point in the future at PSP. At this point, however, several markets are not served during the peak hour, and new non-stop markets are expected to be added. Therefore, under an unconstrained scenario, there is still an opportunity for growth during the peak hour. If the necessary gate facilities were not available, growth would either spread to off-peak hours or be inhibited.

Peak hour enplanements are projected to increase from 840 in 2008 to 1,483 in 2028, and similar increases are anticipated with peak hour deplanements, passengers, and aircraft operations.

Table 3-30

Peak Passenger Activity
(Peak Hour defined as Peak 60 Minutes)

Year	2007	2008	2013	2018	2023	2028
Passenger Enplanements						
Annual Enplanements						
Domestic (a)	755,831	706,701	826,057	982,031	1,114,254	1,260,098
International (b)	49,715	67,355	87,844	110,479	136,241	165,871
Total	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969
Peak Month Enplanements (c)	115,392	115,678	130,913	156,499	179,130	204,266
Average Day Peak Month Enplanements (d)	3,722	3,732	4,223	5,048	5,778	6,589
Peak Hour Enplanements (e)		840	951	1,136	1,301	1,483
Peak Hour Deplanements (e)		779	882	1,054	1,206	1,376
Peak Hour Passengers (e)		1222	1,383	1,653	1,892	2,158
Passenger Aircraft Operations						
Annual Aircraft Departures						
Domestic (f)	14,035	12,801	14,036	15,736	16,681	17,690
International (g)	473	605	770	965	1,142	1,349
Total	14,508	13,406	14,806	16,701	17,823	19,039
Peak Month Departures (h)	1,807	1,727	1,844	2,080	2,220	2,372
Average Day Peak Month Aircraft Departures (d)	58	56	59	67	72	77
Peak Hour Aircraft Departures (i)		9	10	11	12	12
Peak Hour Aircraft Arrivals (i)		9	10	11	12	12
Peak Hour Aircraft Operations (i)		17	18	20	22	23

(a) Table 3.20.

(b) Table 3.26.

(c) Current peak month enplanements from Table 3.13. Future peak month share of annual enplanements assumed to remain constant.

(d) Peak month divided by 31 days.

(e) Current peak hour passenger activity based on seat departures/arrivals in Table 3.15 and 95 percent load factor. Future share of average day peak month assumed to remain constant.

(f) Table 3.25.

(g) Table 3.29.

(h) Current peak month operations from Table 3.14. Future peak month share of annual operations assumed to remain constant.

(i) Current peak hour operations activity based on aircraft departures/arrivals in Table 3.15. Future share of average day peak month assumed to remain constant.

Sources: As noted and HNTB analysis.

3.7 AIR CARGO FORECAST

Until recently, air cargo was one of the most rapidly growing areas of aviation activity, primarily because of new innovative services such as overnight door-to-door delivery and, to some extent, strong economic growth in the U.S and abroad in recent years. The spike in fuel prices and economic recession has slowed air cargo recently, causing a diversion to other less expensive transportation modes, trucking for domestic cargo and waterborne shipping for international cargo. This section reviews the air cargo forecast for PSP, beginning with the assumptions, methods, and data used in the forecast and ending with a discussion of the forecast results.

Air cargo differs from passenger traffic because the potential service area is much more extensive. While passengers may balk at driving more than an hour to an airport, shippers and freight forwarders routinely truck freight 500 miles or more to an airport offering the best rates and service. Consequently, there is less certainty as to whether an airport is capturing its true air cargo potential. Highly variable growth, a rapidly changing operating environment, competing airports with major cargo operations, and fluid markets make air cargo less predictable than passenger traffic at PSP.

Generally, air cargo is either carried in the belly of passenger aircraft or by all-cargo carriers such as FedEx, and UPS. Until recently, nearly all international cargo and most domestic and international mail were carried by passenger aircraft. However, in response to the September 11th terrorist attacks, the FAA issued a new security directive to strengthen security standards for transporting cargo on passenger flights. This directive has caused a significant shift in air cargo activity from passenger carriers to all-cargo carriers. Since all air cargo at PSP is carried in only passenger bellies, this has resulted in a significant decline in total air cargo at the Airport.

3.7-1 Methodology and Data Sources

This section provides a brief overview of the air cargo forecasting methodology, including descriptions of the data sources.

A top-down approach was used to project air cargo activity, for many of the same reasons that this approach was used for the international passenger activity forecasts. A bottom-up approach based on local historical data was not possible because there is no data on true air cargo originating tonnage as opposed to transfer tonnage. Therefore, it is not possible to assess the relationship between local economic factors and local air cargo demand. Likewise, it is not possible to assess the “leakage” that may be occurring from the PSP air cargo catchment area to other airports that have a broader range of air cargo services, such as Ontario.

A top-down approach provides an opportunity to apply findings researched by the FAA, Boeing, and Airbus. The selected top-down approach can be briefly summarized as follows:

- Develop consensus forecast of U.S. domestic air cargo flows.
- Adjust the cargo forecasts for local factors.
- Project future enplaning and deplaning domestic cargo tonnage for PSP.

Historical data and industry forecasts for the air cargo volume forecast were compiled from a variety of sources. Those sources include the Airport, the USDOT's Schedule T-100 Airport Activity Statistics, the FAA, Boeing, Airbus, and other industry publications.

As noted in Section 3.3, some carriers have ceased distinguishing between air mail and air freight when reporting their statistics. Consequently, the forecast contained herein combines freight and mail into a single air cargo category.

3.7-2 Industry Forecasts

Table 3-31 presents a comparison of projected domestic and North American air cargo forecast growth rates developed by the FAA, and by Boeing and Airbus. Each forecast has been converted to an index in which 2007 activity levels equal 100 to facilitate comparison. A consensus forecast was developed for domestic air cargo using the average of the forecast indexes from the three organizations. The forecasts were interpolated where necessary.

3.7-3 Air Cargo Tonnage Forecasts

Table 3-32 presents projected air cargo tonnage for PSP. The historical trends in the share of domestic US tonnage accounted for by PSP were examined. As noted earlier, cargo flows at PSP have fallen dramatically as a result of increased security restrictions, the transfer of many mail contracts from passenger carriers to FedEx, and the use of smaller aircraft with less cargo capacity. The decline in the PSP share of U.S. cargo activity appears to have leveled off since 2006, so the effect of these factors may now be fully incorporated. Therefore, the PSP share of U.S. cargo was assumed to remain constant in the future.

As shown in **Table 3-32**, air cargo is projected to increase from 53,949 pounds in 2008 to 111,812 pounds in 2028, an average annual increase of 3.7 percent. Although air cargo at PSP is projected to increase aggressively, lift capacity on the passenger carriers is projected to be more than sufficient to accommodate that growth. Therefore, all cargo at PSP is projected to continue to be carried in the bellies of passenger aircraft.

Table 3-31

Industry Forecasts of Air Cargo Tonnage

	2007	2008	2009	2010	2013	2018	2023	2028
Domestic								
FAA								
RTMs (millions) (a)	15821.4	16263.8	16973.5	17638.0	19431.5	22424.8	25411.9	28696.7
Index	100	103	107	111	123	142	161	181
Boeing (b)								
Index	100	105	110	115	133	169	215	273
Airbus (c)								
Index	100	104	109	113	128	157	193	237
Average (d)	100	104	109	113	128	156	190	231

(a) Revenue Ton Miles (RTMs) from FAA Aerospace Forecast: Fiscal Years 2008-2025. Value for 2028 is found using the growth rate between 2023 and 2025
(b) Boeing, Current Market Outlook: 2007-2027.
(c) Airbus, Global Market Forecast: 2007-2026.
(d) Average of FAA, Boeing and Airbus indexes.

Sources: As noted and HNTB analysis.

Table 3-32

Projected Air Cargo (Pounds)

Year	US RTMs (a)	Index (b)	PSP Pounds (c)	PSP Share (d)
1993	10374.1		626,035	0.0302
1994	11323.3		593,886	0.0262
1995	12,415.7		448,331	0.0181
1996	12,781.7		480,043	0.0188
1997	13,454.1		465,820	0.0173
1998	13,828.1		395,840	0.0143
1999	13,974.9		263,044	0.0094
2000	14,698.7		288,325	0.0098
2001	13,937.9		202,832	0.0073
2002	12,967.4		163,139	0.0063
2003	14,972.4		226,823	0.0076
2004	16,340.9		208,259	0.0064
2005	16,089.6		149,164	0.0046
2006	15,710.5		54,273	0.0017
2007	15,821.4	100	38,340	0.0012
2008	16,263.0	104	53,949	0.0017
2013	20,254.7	128	62,081	0.0015
2018	24,693.1	156	75,685	0.0015
2023	29,994.6	190	91,935	0.0015
2028	36,479.6	231	111,812	0.0015

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025 for historical data. Assumed to increase in accordance with index in future. Domestic Revenue Ton Miles in millions.

(b) Table 3.31.

(c) Historical data from Table 3.11. Future cargo weight assumed to grow at same rate as index adjusted by change in PSP share.

(d) Historical share calculated by converting PSP pounds to RTM's and dividing by US RTMs. Projected share assumed to remain at 2006-2008 levels.

Sources: As noted and HNTB analysis.

3.8 AIR TAXI, GENERAL AVIATION, AND MILITARY FORECAST

This section discusses the forecasts of air taxi which includes for-hire and other non-scheduled commercial aircraft operations, general aviation, and military activity.

3.8-1 Air Taxi and Other

The category of air taxi and other includes operations by non-scheduled charter operators and air taxi operators which have not been included in the categories discussed thus far—scheduled and charter passenger, air cargo, and GA and military, which will be discussed later in this section. These additional operators primarily consist of true air taxi operators. Non-revenue commercial operations that are not included in the US DOT's T-100 data base are also included in this category.

Air taxi and other operations are not included in the Airport statistics or OAG schedules and are only intermittently included in the USDOT statistics. In their tower statistics, the FAA classifies most of these operations as air taxi, although some are counted as air carrier.[13] The total number of aircraft operations in this category at PSP is estimated as the difference between the FAA Tower count of combined air carrier and air taxi operations and the official airport count of all commercial operations. Using this definition, the air taxi and other category accounted for 6,809 operations in 2007 (see **Table 3-33**). The principal source of information on the breakdown of the air taxi and other category is one-year sample of radar data using the FAA's ETMSC data base. Most of these operations consist of jet aircraft, such as Cessna Citations and Learjets.

Historical data on these operations is scant, so it is difficult to perform any type of statistical analysis on this activity category. Non-scheduled operations tend to be more variable and unpredictable than scheduled operations. The FAA includes air taxi activity with regional carrier activity when forecasting. The air taxi and other category also share some characteristics of GA, specifically in terms of the type of aircraft used.

The principal functions of the air taxi and other category—on-demand transfer of time-sensitive documents and executive personnel—have become increasingly important in today's economy, where speed and flexibility are critical. This suggests that the future air taxi industry is poised for significant growth. Innovative air taxi initiatives based on very light jets, if they are realized, would also spur growth. Conversely, the growth in electronic check transfers will likely cause a significant reduction in the number of check transfer flights.

Acknowledging the lack of historical data and considering potentially contradictory trends in future activity, it was assumed that future PSP air taxi operations would grow at the same rate as the FAA forecast of general aviation and air taxi hours flown.

Each category of air taxi aircraft operation (jet, turboprop, piston) was assumed to grow at the same rate as FAA forecast of hours flown in that category. The results were then adjusted on a prorated basis to sum to the original forecast of air taxi aircraft operations. The result, as shown in **Table 3-34**, is an increase in jet operations at the expense of turboprop and piston operations. Most of the operators in the air taxi and other category fly jets. New air taxi initiatives are assumed to use microjets. Consequently, it is reasonable to expect that the new growth in this category will consist of jet aircraft. Air taxi and other operations are projected to increase from 5,330 in 2008 to 8,642 in 2028.

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[13] Note that the FAA Tower Counts also include scheduled commuter operations in the air taxi category.

Table 3-33

Estimate of True Air Taxi and Other Operations: 2007

	Departures	Operations
Airport Data (a)		
Air Carrier		11,520
Air Taxi		24,371
Subtotal		35,891
US DOT T-100 data (b)		
Scheduled Passenger Carrier	14,508	29,016
Charter Carrier	33	66
All-Cargo Carrier	-	-
	231,243	29,082
Estimated True Air Taxi Operations (c)		6,809

(a) Table 3.12.

(b) USDOT T100 data as compiled by DataBase Products, Inc.

(c) Airport count of commercial operations less USDOT count of scheduled passenger carrier, charter carrier, and all-cargo carrier operations.

Sources: As noted and HNTB analysis.

Table 3-34

Forecast of True Air Taxi

	2007	2008	2013	2018	2023	2028
FAA GA and Air Taxi Hours Flown (thousands) (a)	27,866	28,446	33,459	38,954	44,763	51,133
Adjustment for Increased Fuel Prices (b)			0.892	0.822	0.835	0.860
Adjusted FAA GA and Air Taxi Towered Operations (c)			29,848	32,001	37,357	43,976
Ratio of PSP Air Taxi Operations to FAA Hours Flown (d)	0.2443	0.1965	0.1965	0.1965	0.1965	0.1965
PSP Air Taxi Operations (e)	6,809	5,590	5,865	6,289	7,341	8,642
Helicopter	2	2	1	1	1	1
Single Engine Piston (f)	8	6	4	3	3	3
Twin Engine Piston (f)	23	17	9	6	6	6
Turboprop (f)	310	235	153	123	119	122
Jet (f)	6,466	5,330	5,698	6,156	7,212	8,510

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.
(b) FAA forecast adjusted to reflect DOE increase in projected fuel prices. See text for details.
(c) FAA forecast multiplied by adjustment factor for increased fuel prices.
(d) Ratio of PSP true air taxi operations to FAA GA and air taxi hours flown. Assumed to remain constant.

(e) FAA forecast of GA and air taxi hours flown multiplied by ratio of true PSP air taxi operations to FAA GA and air taxi hours flown.
(f) Operations in each category obtained from FAA's ETMSC data base. Operations assumed to increase at same rate as FAA forecast of hours flown in that category and then adjusted proportionately to sum to forecast of total PSP air taxi operations

Sources: As noted and HNTB analysis.

3.8-2 General Aviation

Over most of the past two decades, general aviation operations at PSP have been fluctuating upwards and downwards with no discernible long-term trend. There was a decline, however, in 2007 and 2008 with the spike in fuel prices followed by the recession. Factors that will affect future demand for general aviation include aircraft acquisition costs, future fuel prices and other operating costs, the continuing trend from sport/personal use to business/corporate use, and the potential new niches opened up by very light jets. Issues specific to PSP include competition from other airports, such as the Jacqueline Cochrane Regional Airport. The GA forecast includes both based aircraft and aircraft operations.

Table 3-35 shows the forecast of based aircraft for PSP. The existing number of based aircraft is based on information provided by the Airport. Future based aircraft were based on the trend in the historical PSP share of the U.S. general aviation fleet, and an assumption that the trend would continue into the future. The estimated future share was applied to the FAA's projection of the national fleet with an adjustment for the adverse impact of higher fuel prices (see **Table 3-16**).

The based aircraft in each GA aircraft category were assumed to grow at the same rate as FAA forecast of active general aviation aircraft in that category. The results were then adjusted on a prorated basis to sum to the original forecast of GA based aircraft.

Table 3-36 shows the recent history of general aviation operations at PSP and compares it to the FAA count of GA and air taxi hours flown in the US. As shown, PSP GA activity, as a share of the United States, has been stable until 2007 and 2008. Since 2001, US GA activity (hours flown) has been relatively constant. In early 2008, the FAA predicted that GA will begin to grow again in the near future based on the following assumptions:

- Moderate sustained economic growth;
- No dramatic changes in the GA regulatory environment; and
- Increased growth in the fractional ownership market, which brings new owners and operators into business aviation.

The FAA's prediction was based on the DOE's more optimistic 2008 fuel price forecast. An adjustment was made to the FAA's forecast based on the DOE's revised less optimistic 2009 fuel price forecast and price elasticity factors included in the FAA's Benefit-Cost Analysis Guidance.[14] The projected change in the PSP share was then applied to the adjusted FAA forecast of hours flown.

As shown in **Table 3-36**, based on the trend between 1997 and 2007, the share of US GA activity accounted for by PSP operations is projected to increase slightly from the 2008 level. Total GA operations at PSP are therefore forecast to increase from 39,181 in 2008 to 60,863 in 2028, an average annual increase of 2.2 percent.

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[14] FAA Airport Benefit-Cost Analysis Guidance, December 15, 1999.

Similarly to the air taxi forecast, operations in each GA aircraft category were assumed to grow at the same rate as FAA forecast of hours flown in that category. The results were then adjusted on a prorated basis to sum to the original forecast of GA aircraft operations. The result, as shown in **Table 3-37**, is a rapid increase in jet operations, while turboprop and twin-engine piston operations decrease.

Table 3-35

Forecast of General Aviation Based Aircraft by Type

	2007	2008	2013	2018	2023	2028
General Aviation Fleet (a)						
Single Engine Piston (b)	91	88	84	83	83	85
Twin Engine Piston (b)	13	15	15	14	14	14
Turboprop (c)	0	5	5	6	6	6
Helicopter (d)	1	1	1	2	3	3
Jet (b)	11	5	18	21	24	27
Other (b)	0	1	3	5	6	8
TOTAL	116	115	126	131	136	143

(a) Existing Based Aircraft Count Provided by PSP.

(b) Derived through trend projection of relative proportion of PSP (2008 TAF) to total U.S. (2008 TAF) based aircraft and applied to 2008 FAA Aerospace Forecast for total U.S. based aircraft with adjustment for change in DOE fuel price projections.

(c) Due to lack of turbine/turboprop statistics in 2008 FAA Terminal Area Forecast (2008 TAF), PSP turbine projections are based solely on 2008 FAA Aerospace Forecast growth projections for turboprop aircraft.

(d) Due to lack of consistant data and robust sample, based helicopter projections assumed to remain constant with one additional aircraft introduced in 2014 and 2020.

Sources: As noted and HNTB analysis.

Table 3-36

Forecast of General Aviation Operations

Year	FAA GA and Air Taxi Hours Flown (a)	Adjustment Factor (b)	Adjusted Hours Flown (c)	Ratio of PSP GA Operations to FAA Hours Flown (d)	PSP GA Operations (e)
1995	26,612			2.109	56,113
1996	26,909			1.873	50,392
1997	27,713			1.911	52,951
1998	28,100			1.942	54,562
1999	31,230			2.034	63,520
2000	30,219			1.962	59,287
2001	27,016			2.280	61,588
2002	27,039			2.626	71,011
2003	27,315			2.115	57,763
2004	28,111			2.137	60,084
2005	27,078			2.172	58,820
2006	27,705			2.096	58,073
2007	27,866			1.704	47,476
2008	28,446			1.377	39,181
2013	33,459	0.892	29,848	1.379	41,161
2018	38,954	0.822	32,001	1.381	44,184
2023	44,763	0.835	37,357	1.382	51,640
2028	51,133	0.860	43,976	1.384	60,863

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025. Value for 2028 extrapolated from growth rate bewtween 2023 and 2025.

(b) FAA forecast adjusted to reflect DOE increase in projected fuel prices. See text for details.

(c) FAA forecast multiplied by adjustment factor for increased fuel prices.

(d) Historical ratio of GA operations at PSP to US GA and Air Taxi Hours Flown. Assumed to continue to change at historical 1995-2007 rates and applied to 2008 base level.

(e) Historial GA operations from Table 3.12. Future GA operations estimated by multiplying FAA forecast of GA and Air Taxi hours flown by ratio of PSP GA operations to FAA hours flown.

Sources: As noted and HNTB analysis.

Table 3-37

Forecast of General Aviation Operations by Type

	2007	2008	2013	2018	2023	2028
General Aviation Operations (a)	47,476	39,181	41,161	44,184	51,640	60,863
Single Engine Piston (b)	33,211	26,923	24,945	24,719	27,551	31,795
Twin Engine Piston (b)	5,108	4,106	3,412	2,888	2,938	3,120
Turboprop (b)	1,003	829	838	822	878	935
Helicopter	346	298	341	366	417	472
Jet (b) (c)	7,808	7,025	11,625	15,388	19,856	24,541

(a) Table 3.35.

(b) Operations in each category obtained from FAA's ETMSC data base. Remaining VFR operations that don't appear in ETMSC data based assumed to be distributed in proportion to piston powered based aircraft. Operations assumed to increase at same rate as FAA forecast of hours flown in that category and then adjusted proportionately to sum to forecast of total PSP general aviation operation

(c) Existing jet operations by type obtained from a one-week sample of radar data using FAA's ETMSC data base. Future mix based on published information on aircraft orders, production status, and age.

Sources: As noted and HNTB analysis.

3.8-3 Military

Military operations are related to national and international political and institutional factors rather than local economic conditions. Military operations at PSP have fluctuated substantially during most of the past eighteen years. Due to the uncertainties enumerated above and consistent with national forecasts, military operations are assumed to remain constant at 2008 levels throughout the forecast period. However, future national defense actions or policy decisions could increase or decrease future military operations. **Table 3-38** shows the forecast of military aircraft operations.

Table 3-38

Forecast of Military Operations

Year	Military Operations (a)
1990	1,650
1991	1,522
1992	2,222
1993	1,063
1994	928
1995	1,254
1996	749
1997	293
1998	940
1999	1,547
2000	1,030
2001	730
2002	866
2003	977
2004	897
2005	955
2006	1,259
2007	1,310
2008	1,227
2013	1,227
2018	1,227
2023	1,227
2028	1,227

(a) Historical data from Table 3.12. Future military operations assumed to remain constant.

Sources: As noted and HNTB analysis.

3.9 SUMMARY

This section summarizes the passenger and aircraft operation forecasts and provides a comparison with the FAA's Terminal Area Forecast (TAF) for PSP. **Table 3-39** provides a summary of the passenger, aircraft operation, and based aircraft forecasts.

Total domestic and international enplanements are forecast to increase from just under 0.8 million in 2008 to 1.4 million in 2028, an average annual increase of 3.1 percent. International enplanements are projected to grow more quickly than domestic enplanements.

Total aircraft operations are estimated to increase from 72,876 in 2008 to 108,875 in 2028, an average annual increase of 2.0 percent. The international passenger and air taxi operation categories are projected to grow the most rapidly, while general aviation and military aircraft operations are projected to grow more slowly.

A comparison of the PSP forecasts with the FAA's latest TAF is provided in **Table 3-40**. The enplanement numbers used in this forecast are not completely consistent with those used in the TAF since the Airport counted 2 percent more enplanements in Fiscal Year 2008. The difference is most likely attributable to non-revenue passengers which are not included in the TAF numbers. Passenger enplanements by 2013 are 34 percent higher in this Master Plan forecast than in the TAF. The differences in the passenger forecasts are attributable to the following factors:

- The difference in the count of base year numbers.
- The FAA's anticipated 16 percent decline in passengers at PSP between FY 2008 and FY 2009.
- The FAA used the Riverside-San Bernardino Ontario MSA as a catchment area. The MSA is projected to grow more slowly than Riverside County, which is the catchment area used in the Master Plan.
- The FAA used forecasts from Global Insight, which are more conservative than the SCAG and Woods & Poole economic forecasts used in the Master Plan forecast.

Since most commercial operations are accounted for by passenger aircraft, the difference between the Master Plan and TAF forecast is similar to the difference between the passenger forecasts. The Master Plan and TAF aircraft forecasts of total operations are more similar. Within the first ten years, the difference is about 10 percent, expanding to 23 percent by 2028.

The Master Plan forecasts may appear aggressive when compared with the TAF. It should be noted, however, that the projected passenger growth rates (approximately 3 percent per year) are consistent with those that have been realized in the past (1990-2008). The forecasts assume that PSP will maintain its current role and no major changes, such as overseas service or daily flights to East Coast hubs, are assumed. It is also noteworthy that operations are not projected to exceed 100,000 until after 2023, despite the fact that PSP has achieved these levels several times in the past, most recently in 2002.

Since the forecasts were completed in early 2009, the economic recession has proven worse than originally anticipated. Many airlines have therefore announced an additional round of capacity reductions in their systems. The deeper recession and additional capacity cuts may delay the anticipated economic and air service recovery and, as a result, it may be that actual passenger activity will track below the projections for 2013. It is therefore recommended that the Airport closely monitor activity levels and adjust the phasing of planned improvements accordingly.

3.10 FORECAST SCENARIOS

The assumptions used in developing the forecasts are likely to vary over the forecast period, and the variations could be material. One way to explore the impact of these variations is to develop alternative scenarios in which the impact on the forecast of a variation in a critical assumption is evaluated. The base case forecast provides the basis for determining what additional facilities will be required at the Airport through 2028. The Airport must be able to respond to a range of contingencies that could occur, taking into account economic and cost changes, technological changes, and changes in the policies of individual airlines. The recommended development program must be flexible enough to accommodate these contingencies.

To address these potential changes, four alternative forecast scenarios were selected with the assistance of Airport staff. Much of the background information used to develop the scenarios is provided in previous sections. The four scenarios are:

Scenario 1 – High Economic Growth. This scenario assumes a rapid economic recovery from the current economic recession, and that local and national income would then continue to grow at a rate 50 percent greater than under the baseline forecast. The increased economic growth would boost passenger, cargo and general aviation activity. As detailed in Table D.1 total enplanements would rise slowly to 1.7 million by 2028, an average annual increase of 4.1 percent. Total operations would increase slightly more slowly to 128,664 in 2028, an average annual rate of 2.9 percent per year.

Scenario 2 – Low Economic Growth. This scenario assumes that current recession will be deep and prolonged and that the recovery will be sluggish. As result, regional and national income would grow at a rate 50 percent lower than under the baseline forecast. As detailed in Table D.2, total enplanements would rise slowly to 1.1 million by 2028, an average annual increase of 1.6 percent. Total operations would increase more slowly to 89,276 in 2028, an average annual rate of 1.0 percent per year.

Scenario 3 – High Airport Competition. The High Airport Competition Scenario assumes that improvements in non-stop service and decreases in fares at competing airports, notably Ontario International Airport, increase leakage of passenger demand from PSP. The scenario assumes that fares and yields (revenue per passenger mile) at ONT decline to levels matching the lowest of any airport in southern California. As a result, the price differential between PSP and ONT becomes much greater than it is currently, and leakage from PSP to ONT increases. Table D.3 shows that in this scenario, passenger enplanements would increase more slowly to 1.1 million by 2028, an average annual increase of 2.0 percent. Lower fares at ONT would have minimal impact on air taxi and general aviation activity at PSP, so the reduction in operations from the baseline is less than under Scenario 2. Under Scenario 3, aircraft operations are projected to grow to 101,423 by 2028, a 1.7 percent increase.

Scenario 4 – Low Airport Competition. Scenario 4 assumes that decreases in service and increased fares at competing airports will allow PSP to retain more of the demand originating within its service area. Specifically, fare and yield levels at ONT are assumed to increase until they are the same as at PSP. As shown in Table D.4, total enplanements are projected to increase at an average annual rate of 3.8 percent to 1.6 million by 2028 and total operations are projected to increase at an annual 2.3 percent rate to 114,605 by 2028. Again, fare levels at ONT would have very little impact on PSP air taxi and general aviation activity.

Table 3-41 summarizes the alternative scenarios and provides a comparison with the Base Case. **Appendix D** provides a more detailed forecast breakdown of all scenarios.

Table 3-39

Summary of Forecast

	2007	2008	2013	2018	2023	2028	Compounded Average Annual Growth (CAGR)
Annual Enplanements							
Domestic (a)	755,831	706,701	826,057	982,031	1,114,254	1,260,098	2.9%
International (b)	49,715	67,355	87,844	110,479	136,241	165,871	4.6%
Total	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969	3.1%
5 Year incremental CAGR			3.4%	3.6%	2.7%	2.7%	
International as Percent of Total	6.2%	8.7%	9.6%	10.1%	10.9%	11.6%	
Annual Aircraft Operations							
Domestic Passenger (c)	28,070	25,602	28,072	31,472	33,362	35,380	1.6%
International Passenger (d)	946	1,210	1,540	1,930	2,284	2,698	4.1%
Passenger Charter (e)	66	66	66	66	66	66	0.0%
True Air Taxi (f)	6,809	5,590	5,865	6,289	7,341	8,642	2.2%
Commercial Subtotal	35,891	32,468	35,543	39,757	43,053	46,786	1.8%
General Aviation (g)	47,476	39,181	41,161	44,184	51,640	60,863	2.2%
Military (h)	1,310	1,227	1,227	1,227	1,227	1,227	0.0%
Total	84,677	72,876	77,932	85,168	95,920	108,875	2.0%
5 Year incremental CAGR			1.4%	1.8%	2.4%	2.6%	
Based Aircraft (i)	116	115	126	131	136	143	1.1%

(a) Table 3.20.
(b) Table 3.26.
(c) Table 3.25.
(d) Table 3.29.
(e) Assumed to remain constant.
(f) Table 3.34.
(g) Table 3.37.
(h) Table 3.38.
(i) Table 3.35.

Sources: As noted and HNTB analysis.

Table 3-40

Comparison with FAA Terminal Area Forecast

	2007	2008	2013	2018	2023	2028
Annual Enplanements						
Master Plan (a)	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969
TAF (b)	800,829	778,160	713,226	817,653	939,429	1,061,205
Percentage Difference	0.6%	-0.5%	28.1%	33.6%	33.1%	34.4%
5 Year incremental CAGR						
Master Plan			3.4%	3.6%	2.7%	2.7%
TAF			-1.7%	2.8%	2.8%	2.5%
Commercial Operations						
Master Plan (a)	35,891	32,468	35,543	39,757	43,053	46,786
TAF (b)	35,882	33,586	29,297	31,747	34,402	37,057
Percentage Difference	0.0%	-3.3%	21.3%	25.2%	25.1%	26.3%
5 Year incremental CAGR						
Master Plan			1.8%	2.3%	1.6%	1.7%
TAF			-2.7%	1.6%	1.6%	1.5%
Total Operations						
Master Plan (a)	84,677	72,876	77,932	85,168	95,920	108,875
TAF (b)	90,353	75,159	72,056	77,292	82,822	88,352
Percentage Difference	-6.3%	-3.0%	8.2%	10.2%	15.8%	23.2%
5 Year incremental CAGR						
Master Plan			1.4%	1.8%	2.4%	2.6%
TAF			-0.8%	1.4%	1.4%	1.3%

(a) Table 3.39.
(b) FAA, Terminal Area Forecast, 2008.

Sources: As noted and HNTB analysis.

Table 3-41

Summary of Forecast Scenarios

	2007	2008	2013	2018	2023	2028	Compounded Average Annual Growth (CAGR)
Annual Enplanements							
Base Case	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969	3.1%
Scenario 1: High Economic Growth	805,546	774,056	958,386	1,212,147	1,453,844	1,723,715	4.1%
Scenario 2: Low Economic Growth	805,546	774,056	869,630	974,225	1,050,625	1,134,902	1.9%
Scenario 3: High Airport Competition	805,546	774,056	761,437	876,956	1,005,002	1,146,902	2.0%
Scenario 4: Low Airport Competition	805,546	774,056	1,044,968	1,248,384	1,428,684	1,630,017	3.8%
Annual Aircraft Operations							
Base Case	84,677	72,876	77,932	85,168	95,920	108,875	2.0%
Scenario 1: High Economic Growth	84,677	72,876	81,065	93,139	109,387	128,664	2.9%
Scenario 2: Low Economic Growth	84,677	72,876	74,804	77,236	82,555	89,276	1.0%
Scenario 3: High Airport Competition	84,677	72,876	72,990	78,576	88,922	101,423	1.7%
Scenario 4: Low Airport Competition	84,677	72,876	82,386	90,162	101,254	114,605	2.3%

Sources: Tables D.1 through D.4 and HNTB analysis.

Chapter 4: Facility Requirements

4.1 INTRODUCTION

Facility requirements are a determination of necessary improvements to Airport infrastructure based on the condition of the existing airport infrastructure (2008) and its capability to accommodate the anticipated levels of passengers and operations as determined in the forecast of aviation activity. Requirements are also based on the Palm Springs International Airport (PSP) Master Plan Goals and Objectives as well as the concerns and future needs of Airport staff, Airport tenants, and stakeholders. This chapter presents the facility requirements for airside, terminal, landside, general aviation, and support facilities.

4.2 AIRSIDE FACILTY REQUIREMENTS

Airside facilities consist of runways, taxiways and apron areas where aircraft land, take-off, taxi, and park. The following section describes the airside facilities required to better accommodate future demand and maintain airfield safety at Palm Springs International Airport (PSP). The airside facility requirements are determined by comparing the operations forecast to the operational capacity of existing airside facilities. Airside facility requirements are determined for the following areas:

- Runway system – capacity, length, pavement strength
- Runway safety areas,
- Navigational aids, and
- Taxiways and aprons.

4.2-1 Runway Capacity Requirements

Runway facility requirements for Palm Springs International Airport are based upon the existing two runway system's capability of accommodating an anticipated volume of operations in future years at a given acceptable level of delay. Acceptable future delay levels are determined based partly on the Airport Goals and Objectives (see *Chapter 1: Goals and Objectives*), and the desired level of service. The discussion begins with a general description of the factors that influence runway capacity.

Factors Influencing Runway Capacity

One of the most important statistical metrics for an airport is its runway capacity. Runway capacity is best defined as the maximum sustainable throughput of aircraft operations. Several factors influence an airport's runway capacity, including fleet mix, weather, wind, visibility, runway occupancy time, location of runway exits, noise abatement procedures, and hubbing characteristics.

Fleet Mix

Fleet mix is an important factor that influences runway capacity via the involvement of personnel at the Air Traffic Control (ATC) Tower. To maintain a level of safety for all aircraft, air traffic controllers are responsible for separating arriving and departing aircraft to maintain safe operating distances between successive aircraft. Wake turbulence, the counter-rotating air masses generated by heavy aircrafts' engines and wingtips, necessitate controllers to increase the separation distance for any (small and large) aircraft trailing a heavy aircraft. Small aircraft are defined as those aircraft that weigh less than 12,500 lbs. Large aircraft are defined as those aircraft that weigh more than 12,500 lbs but less than 300,000 lbs. Heavy aircraft are defined as those aircraft that weigh in excess of 300,000 lbs. Arrival separation is quantified by the distance, in nautical miles (nm), between successive arrivals. Departure separation is quantified by a time interval, in seconds, between successive departures. **Table 4-1** and **Table 4-2** present the minimum separations under Visual Meteorological Conditions (VMC) as required by the FAA for arrivals and departures, respectively. A very homogeneous fleet mix will result in a higher runway capacity than a very heterogeneous fleet mix. In a congested environment, controllers will group like-aircraft together where possible to enhance runway capacity and reduce overall delay.

Table 4-1: Arrival Separation under VMC Conditions

	Trailing Aircraft		
Leading Aircraft	**Small**	**Large**	**Heavy**
Small	1.9 nm	1.9 nm	1.9 nm
Large	2.7 nm	1.9 nm	1.9 nm
Heavy	3.7 nm	2.9 nm	2.9 nm

Source: FAA Air Traffic Control Guidance

Table 4-2: Departure Separation under VMC Conditions

	Trailing Aircraft		
Leading Aircraft	**Small**	**Large**	**Heavy**
Small	50 sec	50 sec	50 sec
Large	60 sec	60 sec	60 sec
Heavy	120 sec	120 sec	120 sec

Source: FAA Air Traffic Control Guidance

Weather

Weather is a critical component for runway capacity. In a visually dependent Air Traffic Control environment, as found at PSP, poor visibility conditions generally result in an increase in minimum aircraft separations. **Tables 4-3** and **4-4** present the minimum separations for Instrument Meteorological Conditions (IMC) as required by the FAA for arrivals and departures, respectively.

Wind

Wind can considerably affect the operability of runways. For aircraft operations, it is preferable to depart and arrive into the wind as a headwind reduces the amount of speed required by an aircraft to take off and reduces the ground speed upon touchdown. Arriving to and departing from Runway 13R could be limited by a tail-wind as the 3,000-foot displaced threshold and additional declared distance restrictions inhibit the usable runway length.

Table 4-3: Arrival Separation under IMC Conditions

	Trailing Aircraft		
Leading Aircraft	**Small**	**Large**	**Heavy**
Small	2.5 nm	2.5 nm	2.5 nm
Large	4.0 nm	2.5 nm	2.5 nm
Heavy	5.0 nm	4.0 nm	4.0 nm

Source: FAA Air Traffic Control Guidance

Table 4-4: Departure Separation under IMC Conditions

	Trailing Aircraft		
Leading Aircraft	**Small**	**Large**	**Heavy**
Small	60 sec	60 sec	60 sec
Large	60 sec	60 sec	60 sec
Heavy	120 sec	120 sec	120 sec

Source: FAA Air Traffic Control Guidance

Runway Occupancy Time and Location of Runway Exits

Runway occupancy time (ROT), the time it takes for an arriving aircraft to exit and clear the runway, directly impacts runway capacity. The longer an aircraft remains on the runway, the longer a successive aircraft must wait to utilize the runway. ROT is a function of the aircraft type, the location and type of runway exits, and the weather conditions at the Airport. Aircraft with a slow approach speed generally require a shorter landing distance and in most cases can exit the runway more quickly than heavier aircraft. When a runway exit is being designed, research is done to determine an optimal exit location. High speed, acute angle runway exits allow aircraft to exit the runway more quickly as the arriving aircraft does not have to slow down as much to utilize these types of exit taxiways.

Noise Abatement Procedures

Noise abatement procedures can negatively impact runway capacity. Noise abatement procedures, including imposing operational curfews (limiting the days and time aircraft can use the airport), implementing runway usage restrictions (only certain types of aircraft can use a specific runway), modifying flight paths, and limiting operations, impact runway capacity. At PSP, the Air Traffic Control Tower (ATCT) is closed nightly between 11:00 p.m. and 6:00 a.m. This encourages the vast majority of airport operations to use the runways during less noise-sensitive hours.

Hubbing Characteristics

The location of the Airport in the southwestern quadrant of the United States contributes to its role as a "spoke" airport. As a spoke airport, airlines do not utilize PSP as a hub for connecting through-passengers to other final destinations. Typically the first round of flights each day is inbound from spoke airports to the hubs, while the last round of flights is outbound from hubs to spoke airports. A hub airport is subject to extreme modal peaking; hubs typically have a high arrival demand in a short time frame so that passengers from different origins can make their connecting flights. Conversely, spoke airports experience a larger modal diversity throughout the day as the spoke airport feeds and receives flights to and from different hub airports.

Existing Runway Capacity

The existing capacity of the two-runway airport system is calculated by applying the Federal Aviation Administration (FAA) methodology for estimating the hourly and annual service capacity of an airport. The methodology is summarized in Section 2.9-3.

Applying the hourly service capacity methodology to Palm Springs International Airport, in Visual Meteorological Conditions (VMC), the hourly capacity of the two-runway system is approximately 80 operations. VMC allows the Airport, when possible, to have simultaneous operations on Runways 13L-31R and 13R-31L. Under Instrument Meteorological Conditions (IMC), the Airport is effectively reduced to a single runway. Departing aircraft must hold on the runway until arriving aircraft on the parallel runway have touched down. The hourly runway capacity under IMC is 56 operations.

The Airport's annual service capacity is estimated by applying the FAA methodology for calculating an annual service volume (ASV), which generally takes into account runway use, runway exit locations, aircraft fleet mix, weather and operational curfews. This calculation serves more as a benchmark for operational performance than an ultimate capacity. As the actual number of operations approaches the ASV, average delay begins to increase. Typically the ASV estimates average delays between one and four minutes. The ASV estimation is sensitive to fleet mix, the ratio of average daily demand to average peak hour demand during the peak month, and the ratio of annual demand to average daily demand, all of which are projected to change in the forecast horizon.

Following the FAA's methodology for determining ASV as discussed in Section 2.9-3, the ASV was determined for the existing two-runway system to be approximately 130,000 annual operations. In 2007, the Airport handled approximately 85,000 operations. Total annual operations at PSP are not projected to reach the ASV within the planning horizon.

Finally with regards to the existing runway capacity, it should be noted that Runway 13L-31R is restricted to Aircraft Design Group (ADG) II (those aircraft with wingspans between 49 feet and 79 feet) and smaller aircraft, which forces both of these runways to act as mixed-mode runways (i.e. aircraft arrive and depart regularly to both runways). A single mixed-mode runway can offer greater capacity than a segregated operation runway because a mixed-mode runway can insert a departure between successive arrivals. It is advantageous to operate with segregated flows in order to minimize departing aircraft runway crossings.

4.2-2 Runway Length Requirements

The Airport's two parallel runways, Runway 13R-31L and Runway 13L-31R are oriented in the southeast-northwest direction and are 10,001 feet long by 150 feet wide and 4,952 feet long by 75 feet, respectively. The parallel runways are separated by 700 feet, and are located northeast of the passenger terminal.

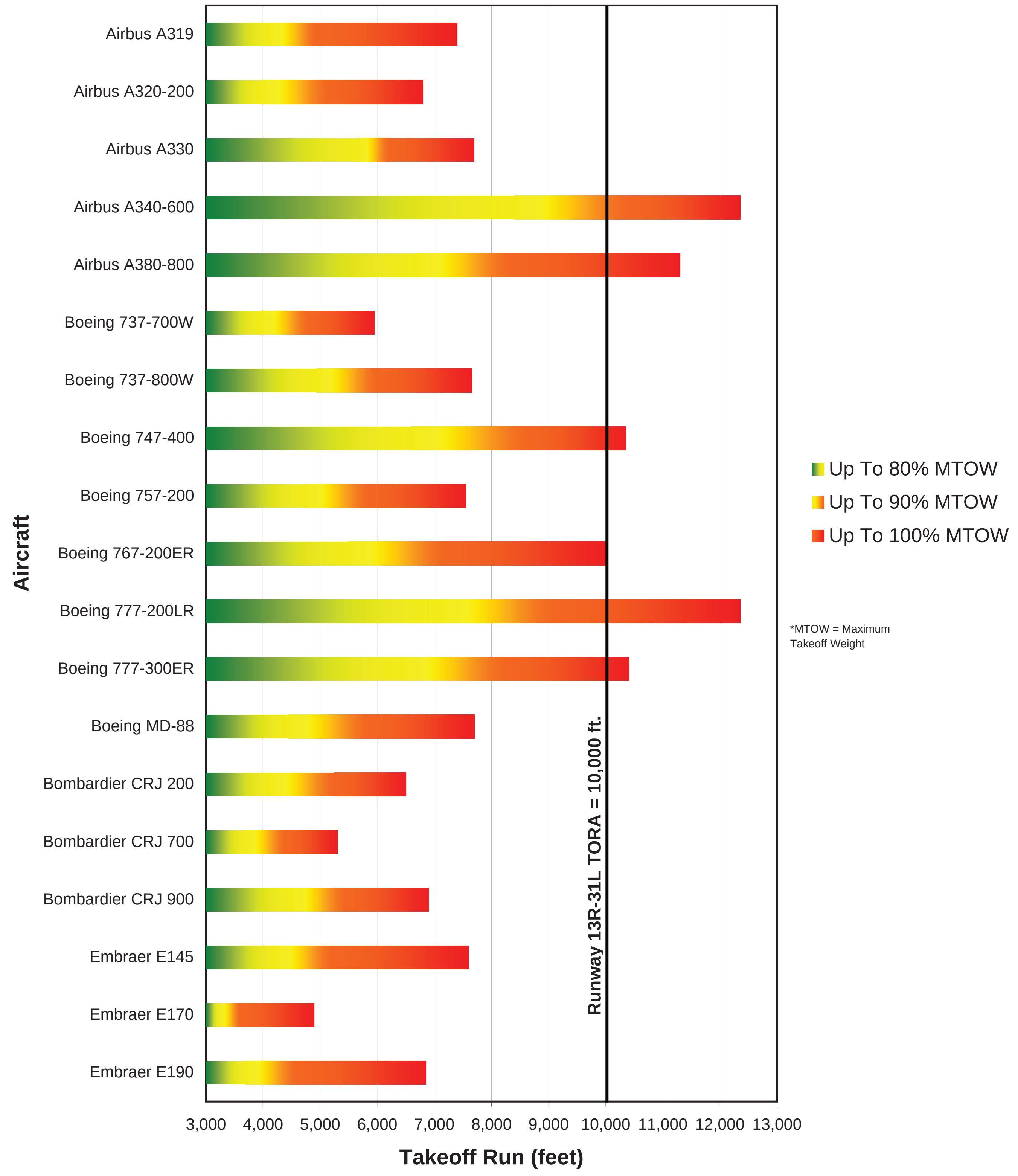
Runway 13R-31L has a 200-foot blast pad on each end of the runway to protect the runway pavement from the effects of jet blast. Each end of the runway has a displaced landing threshold in order to reduce and mitigate community noise impacts. Runway 13R has a 3,000-foot displaced threshold and Runway 31L has a 1,500-foot displaced threshold.

The largest aircraft that regularly uses the Airport is the Boeing 737-800W. On a standard temperature day, at its maximum take-off weight, the Boeing 737-800W requires approximately 7,700 feet of take-off run. On a warm summer day, the Boeing 737-800W requires approximately 8,200 feet of take-off run. **Figure 4-1** depicts a wide range of aircraft take-off performance metrics in standard temperatures at an altitude of 500 feet. The take-off run for Runway 13R-31L is shown for comparative purposes.

Runway length is analyzed for each aircraft at 80, 90, and 100 percent of its maximum take-off weight. As shown on **Figure 4-1**, the largest aircraft that PSP can accommodate without a payload restriction is the Boeing 767-200ER. From a runway length perspective, with a payload restriction, Runway 13R-31L can accommodate virtually every aircraft currently in service. Due to the large seasonal temperature variations in the Palm Springs area, it is necessary to examine take-off performance in hot climates. Similar to the **Figure 4-1**, **Figure 4-2** depicts a wide range of aircraft take-off performance metrics in hot temperatures at an altitude of 500 feet. On a hot day, without a payload restriction, the Airport cannot accommodate the Boeing 767-200ER. All of the aircraft that regularly use PSP can operate on Runway 13L-31R without a payload restriction, even during hot days. *Chapter 3: Aviation Activity Forecasts* anticipates that the largest aircraft that will regularly use PSP in the future is the Boeing 757-200. Under all circumstances, the Boeing 757-200 can depart Runway 13L-31R without a payload restriction.

Landing distance is usually less demanding on runway length than take-off run. However it is still useful to understand the maximum aircraft size capable of landing on Runway 13R-31L because the landing distance available is considerably shorter than the take-off run available. Declared distances, as a result of the displaced thresholds on each end of the runway and the non-standard runway safety area on the departure end of Runway 13R, create landing distances that are not uniform among the two runway directions. Runway 31L's landing distance available is 8,500 feet; Runway 13R's landing distance available is only 6,857 feet. Similar to **Figure 4-1** and **Figure 4-2**, **Figure 4-3** presents the required landing distances for a range of aircraft types at their maximum landing weights at an elevation of 500 feet. Every commercial service aircraft currently in wide use, with the exceptions of the Boeing 747-400 and Airbus A340-600, is capable of landing on Runway 13R. All aircraft are capable of landing on Runway 31L. At this time, PSP has not been identified as a principal airport for aircraft diversions from other regional airports, namely LAX. LA/Ontario International Airport is a more suitable site for aircraft diversions with its longest runway at 12,197 feet and an ILS Category I approach devoid of mountainous terrain.

Based on the fleet mix at PSP and the limitations with regards to their maximum take-off weight and required landing distances, the existing lengths of the runway system at PSP are adequate through the 2028 planning horizon.



*MTOW = Maximum Takeoff Weight

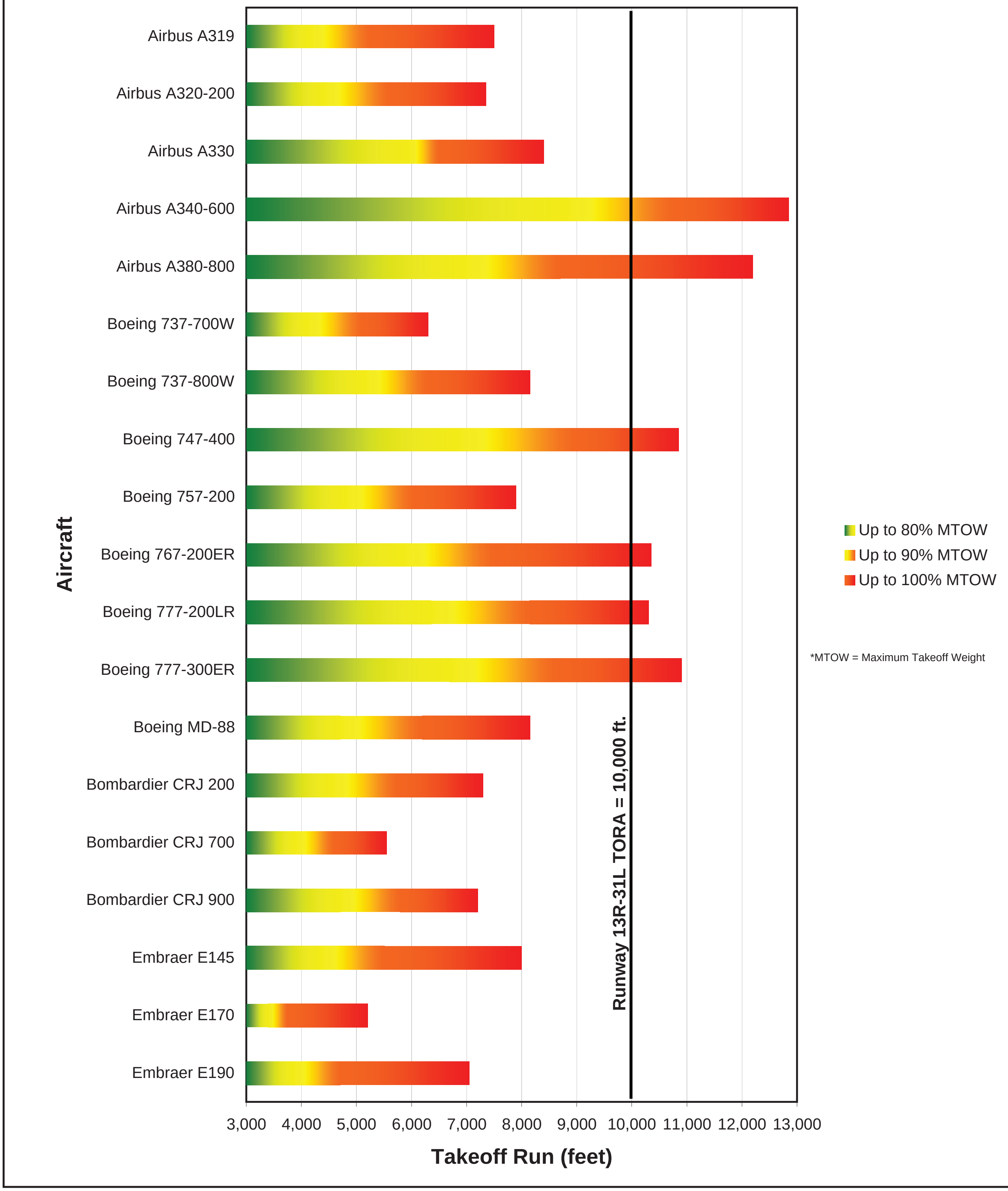
Source: HNTB Analysis

Runway Takeoff Distance Requirements - Standard Day Diagram

Figure 4-1

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE



Source: HNTB Analysis

Runway Takeoff Distance Requirements - Hot Day Diagram

Figure 4-2

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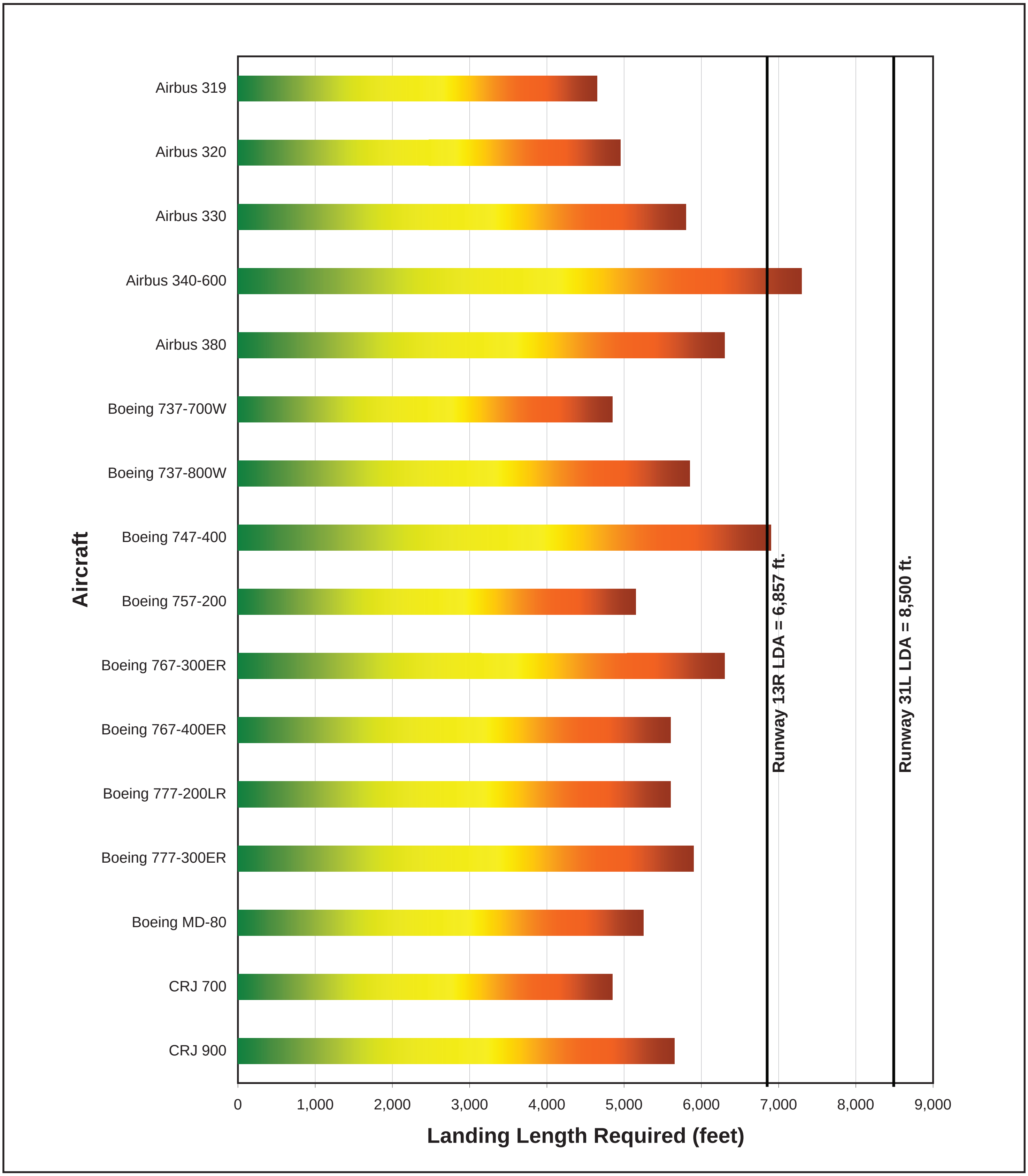

Source: HNTB Analysis

Runway Landing Distance Requirements Diagram

Figure 4-3

PALM SPRINGS INTERNATIONAL AIRPORT
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Runway Pavement Strength Requirements

Runway pavement bearing strengths define the weight limits at or below which an aircraft may operate on the runways. Runways are designed to provide pavement bearing strengths to meet the maximum operational weight of critical aircraft operating on the airfield. Bearing strengths are defined for Single Wheel (SW), Dual Wheel (DW), Dual Tandem (DT), and Double Dual Tandem (DDT) landing gear systems. A Single Wheel landing gear system, as typically found on light general aviation aircraft, refers to aircraft with a single wheel on each side of the main landing gear system. A Dual Wheel landing gear system, as found on a Boeing 737, refers to aircraft with two wheels on each side of the main landing gear. A Dual Tandem landing gear system, as found on a Boeing 757, refers to aircraft with four wheels on each side of the main landing gear. A Double Dual Tandem landing gear system, as found on a Boeing 747, refers to aircraft with two sets of four wheels on each side of the main landing gear. Table 4-5 summarizes the runway pavement bearing strengths for each runway and also includes the pavement classification number (PCN).

Table 4-5: Runway Pavement Bearing Strengths and Pavement Classification Number

Landing Gear System	Runway 13R-31L	Runway 13L-31R
Single Wheel (SW)	105,000 lbs	12,500 lbs
Dual Wheel (DW)	200,000 lbs	60,000 lbs
Dual Tandem (DT)	330,000 lbs	N/A
Double Dual Tandem (DDT)	800,000 lbs	N/A
Pavement Classification Number (PCN)	54/F/B/W/T	5/F/B/W/T

Source: FAA Facility Database

The operating pavement bearing strength requirements of selected aircraft are presented in **Table 4-6** for comparative purposes.

Table 4-6: Runway Pavement Bearing Strengths

Aircraft	Max Gross Take-off Weight	Landing Gear Type
Boeing 737-400	150,000 lbs	Dual Wheel
Boeing 737-700	154,500 lbs	Dual Wheel
Boeing 737-800	174,200 lbs	Dual Wheel
Airbus A320	145,505 lbs	Dual Wheel
Boeing 757-200	255,500 lbs	Dual Tandem
Boeing 767-300	350,000 lbs	Dual Tandem
Boeing 777-200	580,000 lbs	Triple Tandem
Boeing 747-400	870,000 lbs	Double Dual-Tandem
McDonald Douglas MD-11	602,500 lbs	Dual Tandem

Source: Boeing and Airbus Product Specifications

Fully loaded aircraft in **Table 4-6**, specifically the Boeing 747-400, 767-300, and the McDonald Douglas MD-11 are not able to operate on Runway 13R-31L without a payload restriction due to pavement bearing weight restrictions. Given the forecast fleet mix for the planning horizon, runway bearing strength enhancements are not necessary.

4.2-3 Runway Safety Area Requirements

A runway safety area (RSA) is a graded area surrounding a runway that provides added protection from aircraft overrunning and undershooting a runway. A standard RSA for an air-carrier runway dimensions 500 feet wide, centered on the runway centerline, and extends 1,000 feet past both runway ends. The Federal Aviation Administration (FAA) encourages all airports to provide a standard RSA for each runway. However, at PSP, the southerly portion of Runway 13R-31L's RSA is bisected 143 feet from its southern end by the airport property boundary at East Ramon Road. The airport currently employs declared distances to provide the standard RSA dimensions. Effectively, the available runway pavement length for aircraft arriving to Runway 13R is reduced by 143 feet to account for the distance necessary to provide a standard RSA length of 1,000 feet beyond the end of the runway. Similarly, the runway pavement length available for an aborted take-off, known as the accelerate-stop distance available (ASDA), is reduced by 143 feet for aircraft departing Runway 13R. A summary of the declared distances is presented in **Table 4-7**. Though declared distances provide the required RSA dimensions, the FAA prefers a more permanent solution. *Chapter 5*: *Master Plan Alternatives* explores potential alternatives for meeting the standard RSA requirement.

Table 4-7: Runway 13R-31L Declared Distances

Declared Distance	Runway 13R Distance	Runway 31L Distance
Take Off Distance Available (TODA)	10,000 feet	10,000 feet
Take Off Run Available (TORA)	10,000 feet	10,000 feet
Landing Distance Available (LDA)	6,857 feet	8,500 feet
Accelerate-Stop Distance Available (ASDA)	9,857 feet	10,000 feet

Source: FAA Facility Database

4.2-4 NAVAIDS Requirements

An evaluation of NAVAID technology and the potential for establishment of an instrument approach was completed. The analysis considers future activity levels and existing weather factors that limit airport operations due to the lack of an ILS. Evaluation of the timing of establishing an ILS was also considered. Emerging technologies including satellite based navigation systems were evaluated for their potential benefit at PSP and the timing of FAA's implementation of such a system.

Review of Existing NAVAIDS and Lighting

The Airport's existing NAVAIDS are limited to visual approach aids including a Visual Approach Slope Indicator (VASI) (Runway 13R-31L) and Precision Approach Path Indicator (PAPI) (Runway 13L-31R) and GPS. The Airport currently does not have an Instrument Landing System (ILS) with a localizer or glide slope indicator.

The Airport operates approximately 97% of the year under Visual Meteorological Conditions (VMC). The high percentage of visible weather coupled with the operational characteristics of the Airport allows PSP to efficiently operate as a visual airport. Runway 13R-31L is a visual runway, and has a six-box Visual Approach Slope Indicator (VASI) on each end of the runway that helps pilots maintain the approach descent angle. The alignment of the boxes indicates whether the pilot is on the correct glide slope angle, is too steep, or is too shallow. Runway 13L-31R is a non-precision runway, and has a four-box Precision Approach Path Indicator (PAPI) on each end of the runway that functions similarly to the VASI. The Airport has an ASR-9 Airport Surveillance Radar, an Air Traffic Control Tower that is operated from 6:00 a.m. to 11:00 p.m. daily, a GPS VOR, and a rotating beacon. Runway 13R-31L is supported by High Intensity Runway Lighting (HIRL), High Intensity Taxiway Lighting (HITL), and Runway End Identification Lighting (REIL). Runway 13L-31R is supported by Medium Intensity Runway Lighting (MIRL), Medium Intensity Taxiway Lighting (MITL), and REIL.

A modest incompatibility sometimes exists between the region's many wind turbines and the ASR-9. When the velocities of the turbine blades exceed 60 mph, the radar electronically disregards a 200-foot by 200-foot column of space around the wind turbine. The sheer number of wind turbines sometimes makes air traffic control over these areas less reliant on technology and requires more interaction of air traffic controllers.

Instrument Landing System (ILS)

An Instrument Landing System (ILS) provides horizontal electronic guidance from a localizer antenna and vertical electronic guidance from a glide slope antenna. ILS antennas are extremely susceptible to signal interference. Mountainous or hilly terrain can interfere with the effective usable distance of an ILS. The mountains surrounding PSP would limit an ILS installation to an effective usable distance of approximately three nautical miles. The typical final approach course length for an ILS for a stabilized approach is ten miles. In addition to the terrain interference issues, the percentage of time that the airport operates under VMC essentially negates the need for an ILS. The installation of ILS would be an expensive initial investment and be costly to maintain. It is anticipated that PSP will continue to operate efficiently with its current NAVAIDS for the foreseeable future.

Next Generation Air Transportation System (NEXTGEN)

The Next Generation Air Transportation System (NEXTGEN) is a federally mandated program to overhaul the nation's air traffic network. NEXTGEN's goals include "significantly increasing the safety, security, capacity, efficiency, and environmental compatibility of air transportation operations…." (FAA NEXTGEN). NEXTGEN uses an Automatic Dependent Surveillance-Broadcast (ADS-B) system that employs satellite based GPS navigation. Aircraft will continuously transmit their GPS location along with altitude, destination, azimuth, and range. Air Traffic Control will be able to manage flights with 4-dimensional trajectories, three-dimensional space and time. NEXTGEN will safely and efficiently guide aircraft to and from their destinations regardless of the visibility conditions at an airport. The NEXTGEN program will replace ILS and existing radar surveillance once it is deployed. The primary difference between NEXTGEN and today's navigational technology is that NEXTGEN is satellite based while today's system depends upon ground based navigational aids. NEXTGEN technology is expected to be widely available to commercial airlines in possibly the next decade. At that time, PSP will have the opportunity to implement a satellite based precision approach.

Airfield Lighting Requirements

Runway edge lighting allows pilots to identify the runway edge limits at night and under poor visibility conditions. The primary air carrier runway, Runway 13R-31L is equipped with High Intensity Runway Light (HIRL), and Runway 13L-31R is equipped with Medium Intensity Runway Light (MIRL). The existing runway edge lights are adequate for the planning horizon. Taxiway lighting systems allow for the safe taxiing of aircraft at night and under poor visibility conditions. The taxiways supporting the primary air carrier runway are equipped with High Intensity Taxiway Lights (HITL) while the taxiways supporting Runway 13L-31R are equipped with Medium Intensity Taxiway Lights (MITL). All taxiway lighting is L.E.D., the current most advanced type of lighting certified by the FAA. The existing taxiway lighting system is adequate for the planning horizon. Neither runway currently has an approach lighting system. Approach lighting systems are generally associated with ILS landing systems. It is not recommended that an approach lighting system upgrade be implemented during the planning horizon.

4.2-5 Taxiway and Apron Requirements

The forecast of operations does not warrant any improvements to the existing taxiway system (runway exit taxiways, circulation, and staging areas) to enhance capacity. The airfield will continue to operate efficiently beyond the planning horizon without any taxiway improvements. It is useful, however, to identify potential improvements that can be made to the taxiway/apron system should air traffic track higher than the forecast.

Section 2.9-4 discusses the geometric layout of the taxiways at PSP. The Airport has three full length parallel taxiways: Taxiway W north of the passenger terminal and south of Runway 13R-31L, center Taxiway C north of Runway 13R-31L and south of Runway 13L-31R, and Taxiway E north of Runway 13L-31R. Parallel Taxiway W primarily serves air carrier aircraft. It serves both as a means for reaching the departure end of the runway and as a means for reaching the passenger terminal upon arrival. At many busy airports, depending on the layout of the terminals in relation to the runway, a second parallel taxiway is necessary to segregate opposing taxiing operations. The forecast operations level in conjunction with the location of the passenger terminal does not necessitate a second parallel taxiway south of Runway 13R-31L.

As discussed in Section 4-2.1, runway exit placement and type influences runway capacity. **Table 4-8** below presents the runway exit taxiways for PSP.

Table 4-8: Runway Exit Taxiways Description

Taxiway	Width	Description
B	75 feet	Exit taxiway for Runway 13R-31L connecting the runway with Taxiway W and the terminal area, also connects to Runway 13L-31R and Taxiway C
C-1	75 feet	East Flow high speed exit taxiway linking Runway 13R-31L with Taxiway C
D	50 feet	Connects the Sky West maintenance facility with Runway 13L-31R and Taxiway C
F	50 feet	Exit taxiway for Runway 13L-31R connecting the runway with Taxiway E
G	75 feet	Exit taxiway connecting Runway 13R-31L with Taxiway W
H	75 feet	Cross-field taxiway connector linking Taxiway W with Taxiway E
J	75 feet	Cross-field taxiway connector linking Taxiway W with Taxiway E, also serves as a runway entrance and exit at the Runway 13R displaced threshold
K	300 feet	Runway 13R-31L runway exit, entrance, and holding point at the base of the bend in Taxiway W
L	300 feet	Runway 13R-31L runway exit, entrance, and holding point at the far west end of the runway
W-1	75 feet	East flow high speed exit taxiway linking Runway 13R-31L with taxiway W

Source: HNTB Analysis

Runway occupancy time (ROT) impacts runway capacity. The longer an aircraft remains on the runway, the longer a successive aircraft must wait to utilize the runway. High speed, acute angle runway exits allow aircraft to exit the runway more quickly as they can turn onto the exit runway at a higher speed. A ninety degree perpendicular runway exit taxiway requires aircraft to decelerate to a very slow taxi speed prior to exiting the runway. An acute angle high speed taxiway allows an aircraft to exit the runway more quickly because aircraft can still be decelerating while exiting. A shorter runway occupancy time will yield a greater runway capacity as it shortens the duration of each arrival on the runway.

The main air carrier runway has a total of four high speed runway exit taxiways, two connecting to Taxiway W and two connecting to Taxiway C. Three of the four high speed exit taxiways (W-1, H, and C-1) can be used as a high speed taxiway exclusively in east flow. The west flow high speed exit taxiway (also Taxiway H) connects to Taxiway C. East flow high speed exit Taxiway W-1 is located approximately 3,800 feet from the Runway 13R threshold. A more useful high speed exit taxiway would be located in excess of approximately 5,500 feet from the runway threshold. It is not recommended that a high speed runway exit taxiway be included for Runway 13L-31R. General aviation aircraft have a slow final approach speed and their required landing distances are less predictable.

An additional future improvement to the apron and taxiway system would be to relocate and reconstruct the closed portion of Taxiway A further to the north. The relocation would allow for a sufficient envelope for potential landside improvements. A reconstructed Taxiway A would improve ingress and egress to/from the regional concourse. As peak traffic levels increase, a potential bottleneck may exist at the intersection of Taxiways B, W, and W-1. A reconstructed Taxiway A would better segregate inbound and outbound flows and improve congestion if it develops in this location.

4.2-6 Airside Requirements Summary

PSP's airside facilities have sufficient capacity to safely and efficiently carry the Airport through 2028. In summary, the following recommendations are made for PSP's airside facilities:

- Runways:
  1. Runway 13R-31L RSA improvement (short-term (2008-2018))
- Taxiways:
  1. Taxiway A reconstruction and relocation (long-term (2019-2028), beyond 2028):
  2. Relocate T/W W-1 further from the Runway 31L threshold (long-term, beyond 2028)
- NAVAIDS:
  1. Implement NEXTGEN (long-term)
- Airfield Lighting:
  1. No improvements required until or unless required by implementation of a precision approach.

4.3 GENERAL AVIATION RUNWAY IMPROVEMENT FEASIBILITY STUDY

PSP has two runways. The second, smaller runway, Runway 13L-31R, is designed to accommodate light general aviation aircraft. A feasibility study was conducted to determine the potential for improvements to the GA runway such that it could potentially accommodate air carrier operations. The purpose of the study was to determine whether limited improvements to the GA runway could both increase capacity and provide an alternative runway to utilize during maintenance or reconstruction of the primary air-carrier runway at PSP or during emergencies. Currently, when the primary air-carrier runway is closed for rehabilitation, Taxiway C is utilized on a temporary basis as a runway. This is a standard practice for single runway airfields where no runway redundancy is available.

Existing GA Runway Geometry

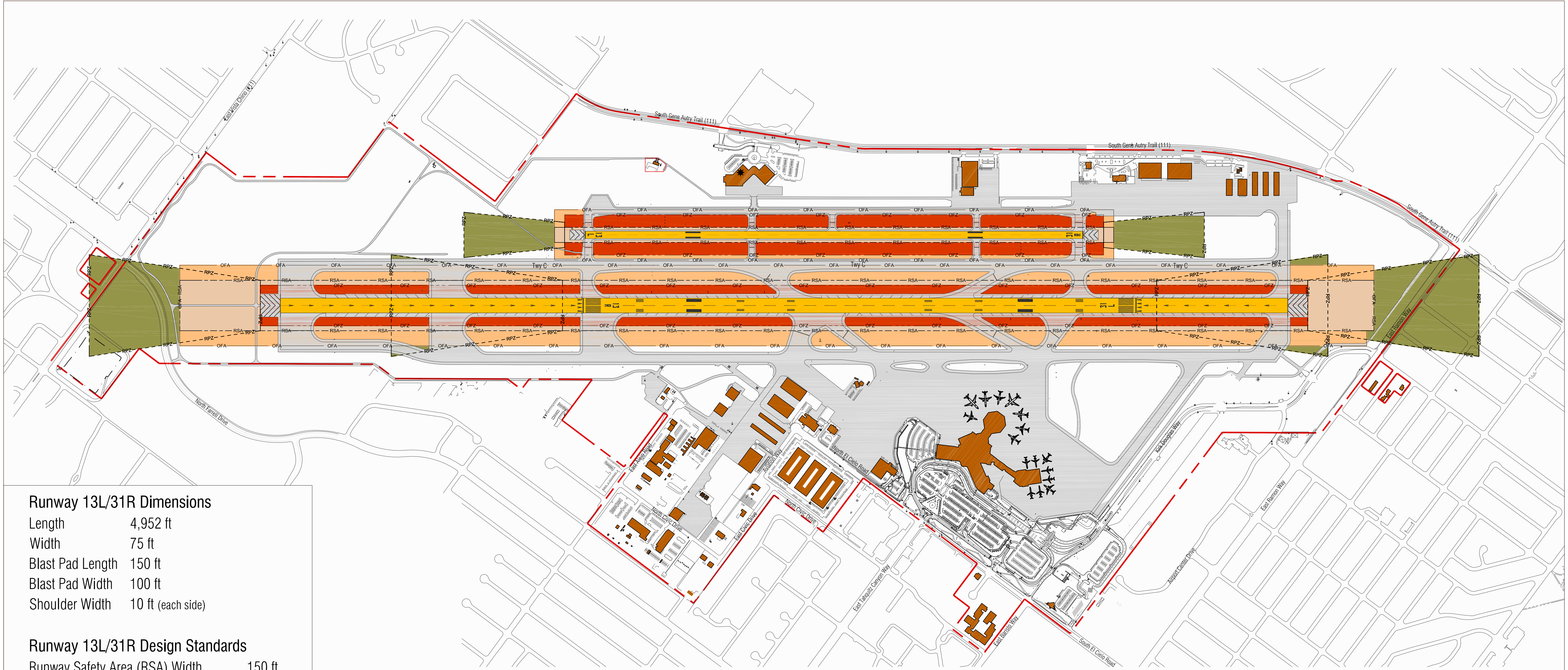
FAA Advisory Circular 150/5300-13 provides guidance for runway design. A discussion of the existing runway design geometry and associated runway elements is necessary to understand what improvements will be needed to potentially convert Runway 13L-31R into an Category C approach speed air-carrier runway.

Runway 13L-31R dimensions 4,952 feet long by 75 feet wide. Each end of the asphalt constructed runway has a 150-foot blast pad. The threshold of Runway 13L is aligned with the end of the displaced threshold of Runway 13R. Runway 13L-31R is constructed on a 0.8 percent slope. The east end has an elevation of 407 feet above mean sea level (MSL) and the west end has an elevation of 449 feet above mean sea level (MSL). In addition to the main design components of the runway (length, width, shoulders, and blast pad), the associated runway elements such as Runway Safety Area, Obstacle Free Zone, Obstacle Free Area, and Runway Protection Zone must be considered. The Runway Safety Area (RSA) surrounds the runway and extends past both ends of the threshold. The Obstacle Free Zone (OFZ) is a three dimensional imaginary surface where no object penetrations are allowed including aircraft maneuvering except for frangible navigation equipment. The Object Free Area (OFA) provides clearing standards for non-essential air equipment near the runway. The Runway Protection Zone (RPZ) is a trapezoidal area designed to protect people and property on the ground. Table 4-9 presents an inventory of the main runway design elements and the associated runway design elements. Figure 4-4 graphically depicts the existing primary and related runway geometry.

Table 4-9: Existing Runway 13L-31R Primary and Related Geometry

Design Element	Dimension
ADG	II
Approach Speed Category	B
Runway Length	4,952 feet
Runway Width	75 feet
Runway Shoulder Width	10 feet
Blast Pad Length	150 feet
Blast Pad Width	95 feet
RSA Length	5,552 feet
RSA Width	150 feet
OFZ Length	5,352 feet
OFZ Width	400 feet
OFA Length	5,552 feet
OFA Width	500 feet
RPZ Length	1,000 feet
RPZ Width	W1 = 250 feet, W2 = 450 feet

Source: HNTB Analysis



Runway 13L/31R Dimensions

Length	4,952 ft
Width	75 ft
Blast Pad Length	150 ft
Blast Pad Width	100 ft
Shoulder Width	10 ft (each side)

Runway 13L/31R Design Standards

Runway Safety Area (RSA) Width	150 ft
RSA Length beyond Runway	300 ft
Obstacle Free Zone Width	400 ft
Obstacle Free Zone beyond Runway	200 ft
Object Free Area Width	500 ft
Object Free Area beyond Runway	300 ft
Runway Protection Zone Length	1,000 ft
Runway Protection Zone Widths W1/W2	250/450 ft

Source: HNTB Analysis

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▬	Airport Property Line	🟩	Runway Protection Zone (RPZ)
🟧	Object Free Area (OFA)	▭	Runways
🟥	Obstacle Free Zone (OFZ)	▭	Taxiways / Apron
▨	Runway Safety Area (RSA)		

Existing Runway Design

Figure 4-4

Palm Springs International Airport
Master Plan

Runway 13L-31R is currently designated for small and medium general aviation aircraft. Specifically, the runway is currently capable of accommodating aircraft up to Airplane Design Group (ADG) II and up to Category B approach speed aircraft. Airplane Design Group standards are presented in **Table 4-10**, and approach speed categories are presented in **Table 4-11**.

Table 4-10: Airplane Design Group

Airplane Design Group (ADG)	Wingspan	Example
I	Up to but less than 49 feet	Cessna 172
II	49 feet up to but less than 79 feet	CRJ 200, ERJ 145
III	79 feet up to but less than 118 feet	Boeing 737, Airbus A320
IV	118 feet up to but less than 171 feet	Boeing 757, Boeing 767, Boeing 787-3
V	171 feet up to but less than 214 feet	Boeing 777, Boeing 747, Airbus A340
VI	214 feet up to but less than 262 feet	Boeing 747-8, Airbus A380

Source: FAA AC 150/5300-13

Table 4-11: Approach Speed Categories

Approach Categories	Speed	Example
A	Less than 91 knots	Cessna 172
B	91 knots up to but less than 121 knots	Beach King Air
C	121 knots up to but less than 141 knots	CRJ 200. Boeing 737, Airbus A320
D	141 knots up to but less than 166 knots	Boeing 747, Airbus A380
E	166 knots and greater	-

Source: FAA AC 150/5300-13

Preliminary Runway 13L-31R Design Requirements

Without fully developing a runway design concept to allow Runway 13L-31R to operate as a Category C runway, a preliminary design layout can test the feasibility of undertaking such a project. The design requirements for runways accommodating Airplane Design Group III and Category C approach speed (Group C-III) aircraft are considerably more taxing on land area due to the increased size of object free areas and other safety areas. A preliminary design methodology will follow the design elements presented in Table 4-9. Primary runway design elements require physical changes to the runway and surrounding area. The following design elements are intended to serve as a preliminary feasibility analysis for accommodating Group C-III aircraft. The design elements depict minimums for upgrading Runway 13L-31R and should only be used for informative purposes.

Given the forecast fleet mix presented in the forecast, it would be advantageous for Runway 13L-31R to be able to accommodate mixed mode operations for Group C-III aircraft (Boeing 737, Airbus A320). Utilizing the runway length requirements analysis presented in Section 4.2-2, a suitable runway length can be determined for Runway 13L-31R. A key assumption in this analysis is to identify the runway length requirements for aircraft operating during hot day conditions. If the runway is intended to be used as a replacement during the rehabilitation of Runway 13R-31L, it will most likely be used during the summer season. A runway length of 6,500 feet can accommodate the majority of Group C-III aircraft operating at

PSP with a 90% maximum take-off load. A minimum runway width of 150 feet is required to accommodate Group C-III aircraft with a gross maximum take-off weight (MTOW) of more than 150,000 lbs. The required runway shoulder width is 25 feet. The runway blast pads, paved areas that protect the runways from the effects of jet blast, would be increased to a length of 200 feet and a width of 200 feet.

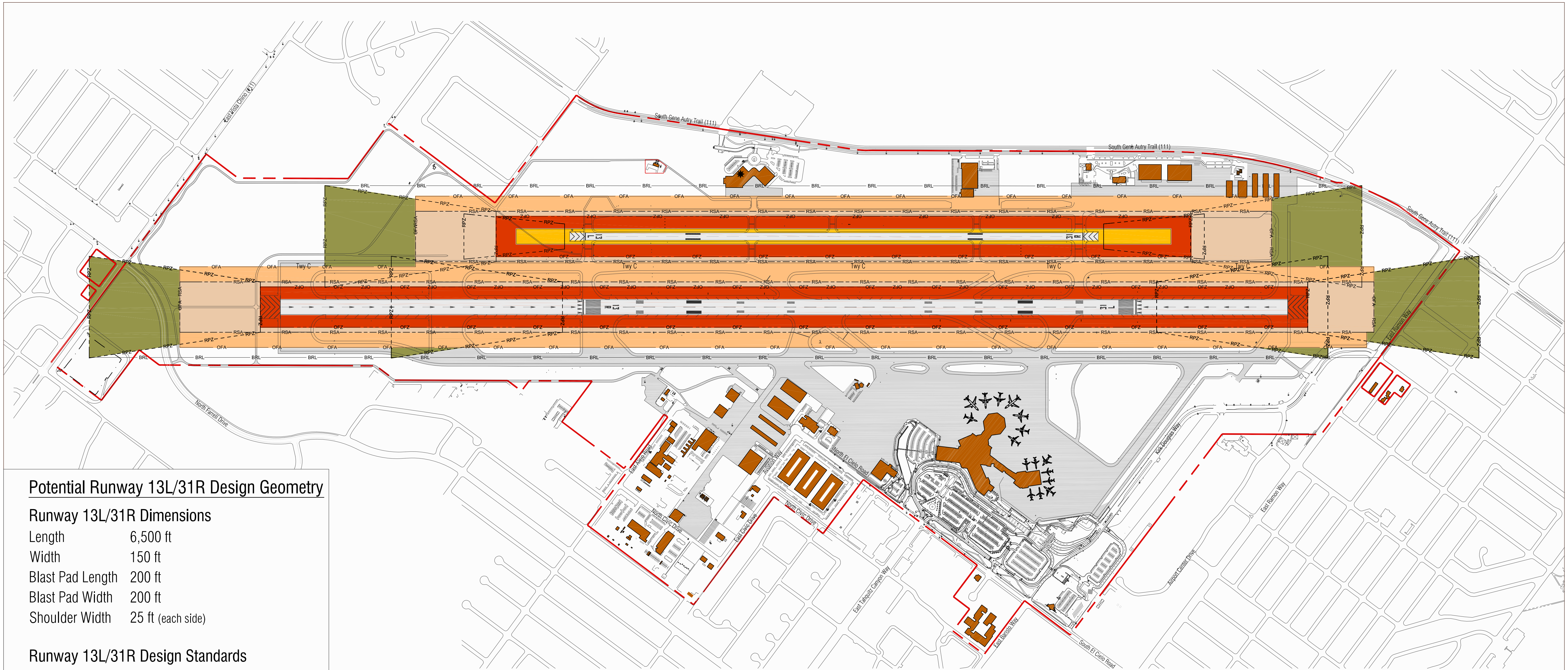
The pavement bearing strengths for Runway 13L-31R would have to be considerably enhanced in order to accommodate Group C-III aircraft. **Table 4-6** presents the current bearing capacity of both runways at PSP. Runway 13L-31R is rated for a dual wheel bearing strength of 60,000 lbs. The air carrier runway is rated for a dual wheel bearing strength of 200,000 lbs. Runway 13L-31R would eventually require a pavement redesigned to accommodate a dual wheel bearing strength of at least 175,000 lbs.

The associated runway design elements should also be redefined. The associated elements are directly correlated to the primary elements; the geometry of the areas is based off of the centerline and thresholds of the redesigned runway. The RSA would require widening to 500 feet and an extension to protrude 1,000 feet beyond the thresholds of the runway. The OFZ width could remain at its current 400 feet, but the length would require extension to protrude 200 feet beyond both thresholds. The OFA would require widening to 800 feet and would require an extension to the back of the RSA. The RPZ dimensions would be the same as the primary air carrier runway: a length of 1,700 feet, an inner width of 500 feet, and an outer width of 1,010 feet. The proposed requirements are summarized in **Table 4-12** and are presented with the existing runway geometry, and graphically presented in **Figure 4-5**.

Table 4-12: Proposed Runway 13L-31R Primary and Related Geometry

Design Element	Existing Geometry	Proposed Geometry
ADG	II	III
Approach Speed Category	B	C
Runway Length	4,952 feet	6,500 feet
Runway Width	75 feet	150 feet
Runway Shoulder Width	10 feet	25 feet
Blast Pad Length	150 feet	200 feet
Blast Pad Width	95 feet	200 feet
RSA Length	5,552 feet	8,500 feet
RSA Width	150 feet	500 feet
OFZ Length	5,352 feet	6,900 feet
OFZ Width	400 feet	400 feet
OFA Length	5,552 feet	8,500 feet
OFA Width	500 feet	800 feet
RPZ Length	1,000 feet	1,700 feet
RPZ Width	W1 = 250 feet, W2 = 450 feet	W1 = 500 feet, W2 = 1,010 feet

Source: HNTB Analysis



Potential Runway 13L/31R Design Geometry

Runway 13L/31R Dimensions

Length	6,500 ft
Width	150 ft
Blast Pad Length	200 ft
Blast Pad Width	200 ft
Shoulder Width	25 ft (each side)

Runway 13L/31R Design Standards

Runway Safety Area (RSA) Width	500 ft
RSA Length beyond Runway	1,000 ft
Obstacle Free Zone Width	400 ft
Obstacle Free Zone beyond Runway	200 ft
Object Free Area Width	800 ft
Object Free Area beyond Runway	1,000 ft
Runway Protection Zone Length	1,700 ft
Runway Protection Zone Widths W1/W2	500/1,010 ft
Aircraft Parking Limit Line (from Centerline)	500 ft

Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

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0 1000'

🟥	Airport Property Line	🟩	Runway Protection Zone (RPZ)
BRL	Building Restriction Line	⬜	Runways
OFA	Object Free Area (OFA)	⬜	Taxiways / Apron
OFZ	Obstacle Free Zone (OFZ)	🟨	Potential Runway Extension
RSA	Runway Safety Area (RSA)		

Runway 13L-31R Design Requirements

Figure 4-5

Palm Springs International Airport
Master Plan

Restrictions and Benefits

Prior to discussing the capacity enhancing benefits of upgrading Runway 13L-31R, restrictions and limitations need to be examined. Runways 13L-31R and 13R-31L are spaced 700 feet apart centerline to centerline. Center Taxiway C is located 400 feet north of Runway 13R-31L and 300 feet south of Runway 13L-31R. FAA requires 400 feet of runway centerline to taxiway centerline separation to use a taxiway when the runway is active. From an aircraft safety and efficiency perspective, it is advantageous to have a center taxiway where aircraft can safely queue without disrupting runway operations. The additional queuing space provided by a center taxiway reduces the frequency of aircraft crossing an active runway. Taxiway E would require relocation to accommodate the larger RSA for upgraded Runway 13L-13R. Perhaps the most significant limitation associated with upgrading the runway is the impact to the aircraft parking limit line. FAA restricts aircraft from parking closer than 500 feet to an active Group C-III runway. This would impact the Atlantic Aviation FBO apron parking area. As depicted in Figure 4-5, the aircraft parking restriction line runs through Atlantic's tie-down apron. The restricted area also runs through the SkyWest Airlines maintenance facility and the apron for the flight museum. A portion of the OFA intersects some of Atlantic's hangars. An industrial property on the corner of Montalvo Way and East Tachevah Drive would likely require some level acquisition to accommodate the larger OFA that would bisect the property.

A dual air-carrier runway airfield would, however, offer two benefits. First, with constant demand, the two runways could provide an increased hourly capacity up to approximately 120 operations. PSP's consistently clear weather would allow for simultaneous runway operations without any usage restrictions. Second, the additional air-carrier runway would also provide redundancy during maintenance or rehabilitation events. The likely cost of implementing these improvements including the cost of mitigating land-use impacts, would be difficult to justify because PSP's airfield already provides sufficient capacity to meet forecast demand and has, in fact, operated at higher operations levels in the past than are forecast in the future. Further evaluation would be required if airfield delay became problematic at PSP.

4.4 TERMINAL FACILITY REQUIREMENTS

This section presents the terminal facility requirements. Functional components of the terminal facility analyzed and presented for the PSP Master Plan are listed below.

- Aircraft gates
- Passenger ticketing and check-in
- Passenger Security Screening Check Point (SSCP)
- Outbound baggage and baggage screening
- Inbound baggage
- Baggage claim
- Concessions
- International arrivals facilities

Terminal Level of Service

Terminal requirements are determined to meet a specified level of service. Level of service (LOS) applied to terminals is a description of the effectiveness of terminal facilities in accommodating passenger demand. LOS is indicated by lettered grades ranging from A to F. A LOS with a grade A (LOS A) indicates an optimally performing terminal facility. For example, in the passenger ticketing lobby, a LOS A would indicate ample room for passengers to maneuver in the queue area, sufficient number of agent positions at the ticketing counters, and overall, ample space to allow for an expedient and efficient passenger ticketing and baggage check-in process even during peak periods. However, given airport operational realities such as limited building space, fluctuating patterns in how passengers use airports throughout the day and year, and the cost of operating and maintaining terminal facilities, terminal planning efforts typically aim to provide a LOS B or C. The International Air Transport Association (IATA) describes a LOS B as a terminal facility that, "in a condition of stable flow, is characterized by very few delays and a high level of comfort".

Terminal requirements are determined by analyzing the capability of terminal facilities in handling peak existing and future passenger demand. Existing utilization rates are first determined based on existing peak hour passenger activity levels from an average day of the peak month (ADPM) and the current space allocation of each terminal functional component. They are then used in part to determine future terminal planning factors, which are indicative of how the terminal components should be utilized in the future. These planning factors are determined based on an analysis of the existing utilization rates. Utilization rates are determined based on on-site observations, how passengers utilize terminal functional components at comparable airports, industry standards, the Planning Team's experience, and LOS B considerations. The resulting planning factors are applied to existing and future peak hour average day peak month (PHADPM) passenger data to determine terminal facility requirements.

4.4-1 Terminal Planning Factors

Existing terminal utilization and future terminal planning factors, separated into the applicable functional components, are shown in **Table 4-13**. They are also described in the following sections.

Table 4-13: Terminal Planning Factors

Category	Existing Utilization Rate	Future Planning Factor
Passenger Ticketing and Check-In		
Ticket Counter Length	0.30 LF/PHOP	0.25 LF/PHOP
Ticket Counter Area	2.51 SF/PHOP	2.70 SF/PHOP
Ticket Counter Queuing	4.43 SF/PHOP	4.90 SF/PHOP
Ticketing Circulation	6.18 SF/PHOP	7.35 SF/PHOP
Airline Ticket Office	11.48 SF/PHOP	7.35 SF/PHOP
Passenger Screening		
Passenger Screening Checkpoint	140 PHOP/Lane	160 PHOP/Lane
Passenger Screening Area	1,226 SF/Lane	1,300 SF/Lane
Baggage Transfer		
Outbound Baggage Make-up	8.81 SF/PHOP	14.14 SF/PHOP
Inbound Baggage Area	3.03 SF/PHTP	11.50 SF/PHTP
EDS In-Line Baggage Screening Area	Encompassed in Outbound Baggage	7.13 SF/PHOP
Baggage Claim		
Baggage Claim Area	17.14 SF/PHTP	30.00 SF/PHTP
Baggage Claim Frontage	0.87 LF/PHTP	1.00 LF/PHTP
Baggage Claim Devices	225 LF/Device	225 LF/Device
Baggage Service Office Area	0.45 SF/PHTP	1.97 SF/PHTP
Baggage Claim Circulation Area	12.6 SF/PHTP	12.6 SF/PHTP
Concessions		
Concessions Area	0.020 SF/ANNEP	Held Constant
Public Areas		
Circulation – General	0.0182 SF/ANNEP	0.015 SF/ANNEP
Restrooms	1.65 SF/PHP	2.0 SF/PHP
Non-Public Areas		
TSA Offices	11.40 SF/PHOP	1.85 SF/PHOP
Airport Administration	0.016 SF/ANNEP	Held Constant
Airport Operations	-	Held Constant
Mech/Elec/Maint/Stor	0.10 Of Total Area	0.12 Of Total Area

Source: HNTB Analysis

SF = Square Feet; LF = Linear Feet; PHOP = Peak Hour Originating Passengers; PHTP = Peak Hour Terminating Passengers; ANNEP = Annual Enplaning Passengers

4.4-2 Gate Requirements

Gate requirements are a function of passenger aircraft operations and average gate utilization. Base year gate requirements are calculated using the March 2008 schedule from the Official Airline Guide (OAG) and in general assume a twenty-minute buffer between a departing aircraft and the next arriving aircraft at any given gate. Note that the existing number of gates that are required, based on schedule, is less than the available number of gates, indicating that there is excess gate capacity at this time. Since airlines cannot always operate according to their schedules, additional spare gate capacity is included to allow for off-schedule flights. This additional spare gate capacity is assumed to be 8 percent of the requirements calculated based solely on schedule.

Gate requirements in each category (wide-body, 757-class, etc.) are assumed to increase at the same rate as aircraft departures in that category. For the purpose of calculating gate requirements, however, it is assumed that mainline aircraft will be able to use any gate sized to accommodate their type or larger. Therefore, a new 757-class gate requirement is not assumed if there is available wide-body gate capacity. Consistent with existing practice, regional gate requirements are calculated separately from mainline gate requirements. The estimated gate requirements are modified slightly to reflect the anticipated additions of new airlines and new hub service from Table C-1 in Appendix C of the Aviation Activity Forecasts. In general, gate requirements are expected to increase more if new aircraft departures are the result of flights by new airlines to new hubs rather than increased frequencies by existing airlines to existing hubs.

As shown in **Table 4-14**, a requirement of 19 total gates is anticipated by 2028. Of these, 8 will need to be capable of accommodating mainline aircraft, and 9 will need to be capable of accommodating regional aircraft. Two additional gates or positions are needed to accommodate off-schedule or special low-frequency airline operations. However, there are several factors that could impact future gate requirements at PSP including:

- Changes in forecast activity,
- Adjustments in the spare gate percentage,
- Increased future gate utilization among the carriers,
- Changes from preferential use to common use gate lease arrangements,
- Use of hardstands, and
- Introduction of international service from locations without pre-clearance which would require sterile facilities for international arrivals processing.

New gates are not anticipated to be needed at PSP until after 2023. However, many factors can influence the need for additional gates and if passenger enplanements and operations at PSP grow faster than anticipated, new gates may be required at an earlier time. The alternatives analysis will identify potential locations for gate expansion but will not recommend a specific development plan for additional gates. By doing so, the potential for future gate development will be preserved and enhanced. It is expected that an update to this Master Plan will be prepared within five to ten years and that the gate requirements will be updated at that time.

Table 4-14: Forecast of Gate Requirements

		2008	2013	2018	2023	2028
Annual Aircraft Operations						
	Widebody	0	0	0	0	0
	757-Class	0	52	52	0	0
	Narrowbody	4,569	5,100	6,207	6,955	7,723
	Regional	8,736	9,552	10,335	10,764	11,218
Total		13,305	14,704	16,594	17,719	18,941
Gate Requirements*						
	Widebody	0	0	0	0	0
	757-Class	0	1	1	0	0
	Narrowbody	5	4	5	7	8
	Regional	7	8	8	9	9
	Spares**	1	2	2	2	2
Total		13	15	16	18	19
Utilization Rate ***						
	Average Annual	2.8	2.7	2.8	2.7	2.7
	Peak Month	4.3	3.9	4.2	4.0	4.0

Source: HNTB Analysis and as noted.

Notes: *Existing requirements based on March 2008 airline schedule. Assumed to increase at same rate as projected aircraft departures with some minor adjustments to reflect the number of airlines and hubs being served. ** Estimated at 8% of gate requirements without spares. *** Daily departures divided by number of gates.

4.4-3 Ticketing & Check-In Requirements

Passenger ticketing & check-in requirements are determined by an analysis of peak hour originating passengers during an average day during the peak month of activity. Passenger ticketing and baggage check-in area requirements are determined for the following functional components:

- Ticket counter positions (length and area),
- Ticket counter queue area,
- Circulation area within the ticketing hall, and
- Airline Ticket Office (ATO) area.

The length of the ticket counters today is 248 feet and comprises a total area, including the space directly behind and in front of the counter of approximately 2,369 square feet. Based on future planning factors, which account for emerging technology and trends in airline ticketing such as remote check-in, self service ticketing kiosks, and gate information display systems, ticket counter length and area requirements will be 363 feet in 2028 and 3,997 square feet of ticket counter area. The existing length of the ticket counter and total area of the ticket counters will need to be increased sometime after 2013.

The existing ticket counter queue area is approximately 2,384 square feet in area. Field observations and interviews with airport and airline staff revealed notable congestion in the ticketing lobby. The 2008 requirement indicates an almost doubling of queuing area. This requirement will grow to 7,268 square feet in 2028.

The existing ticketing circulation area is approximately 6,452 square feet. The circulation area requirement in 2013 of 7,308 square feet indicates a deficiency in total ticketing circulation area between 2008 and 2013. This deficiency will grow to approximately 4,500 square feet by 2028 with a total area requirement of 10,902 square feet.

Airline Ticket Offices (ATOs) support the day-to-day customer service and administrative operations of the airlines. Airline staffing reductions, electronic ticketing, and other efficiency improvements have reduced the demand for ATO space. The existing PSP ATOs provide sufficient area to accommodate ATO operations through the planning period.

The total ticketing area will need to be increased by approximately 10,000 square feet by 2028. This represents a sizeable increase in the ticketing area. This is primarily due to the PSP's very busy peak tourist season and the characteristics of PSP travelers. In addition to PSP travelers having a tendency to check more baggage, their baggage tends to be larger. As an example, PSP travelers carry nearly ten times the number of golf bags that a typical airport would see. In order for PSP to continue operating with a high level of service, the ticketing queue and lobby area will likely need to double in space to serve passenger activity levels in 2028. The passenger ticketing and baggage check-in requirements for PSP are presented in **Table 4-15**.

There are two measures that have the potential to improve the efficiency of the ticketing lobby including an increased use of self check-in kiosks and implementation of common-use ticket counters. Self check-in allows passengers traveling without checked baggage an opportunity to print their boarding passes without waiting in line for an airline agent. New developments in check-in kiosks also allow passengers with checked baggage to use the kiosks. Typically, an airline agent will staff multiple check-in positions and will assist passengers once their baggage-tags are printed. Passengers would still check-in and print their boarding passes themselves. This reduces the staffing requirement and generally allows for a shorter average passenger processing time. Another effective measure to increase utilization is to implement a common-use system ticketing system. A common-use system allows any airline to use any of the ticketing counters. Airlines would have the ability to spread out their ticketing operation to reduce lines during peak times. If two airlines that are currently located next to each other in the ticketing lobby have similar departure pushes, one could move to another part of the ticketing lobby to provide more space for their passengers. Common use ticketing positions may provide an interim solution to crowding in the ticketing area. It should be noted, however, that implementation of these systems would require modifications to existing airline lease and use agreements and it is not always the best alternative depending on the specific variables at any airport.

Table 4-15: Passenger Ticketing and Check-in Requirements

	Existing	2008	2013	2018	2023	2028
Ticket Counter Length (Linear Feet)	248	206	244	278	319	363
Ticket Counter Area (Square Feet)	2,369	2,264	2,680	3,063	3,506	3,997
Ticket Counter Queuing (Square Feet)	2,384	4,116	4,872	5,568	6,374	7,268
Ticketing Circulation (Square Feet)	6,452	6,174	7,308	8,353	9,561	10,902
Airline Ticket Office (Square Feet)	12,846	6,174	7,308	8,353	9,561	10,902
Total Required Area (Square Feet)	24,051	18,728	22,168	25,337	29,002	33,069
Ticketing Area Deficiency (Square Feet)	--	--	--	1,286	4,951	9,018

Source: HNTB Analysis

4.4-4 Passenger Screening Requirements

Passenger screening requirements were developed for the Transportation Security Administration (TSA) Security Screening Checkpoint (SSCP) facilities at PSP. Security screening facilities for passengers were recently expanded to include more queuing space and screening lanes in order to meet current TSA passenger screening guidelines. The facility currently has 6 screening lanes (three walk through metal detectors, one advanced imaging technology unit, six hand-carry x-ray belts), including a priority lane, and three search corrals. Each screening lane is equipped with a walk through metal detector (shared between two lanes) and an x-ray bag belt. The facility requirements analysis determined the existing SSCP's capacity and ability to accommodate future demand. The existing SSCP area, which includes passenger queue and screening areas totals approximately 7,354 square feet.

Future planning factors for the SSCP are derived from comparable airports and industry standards. The number of required lanes is driven by the number of peak hour originating passengers. The typical hourly throughput of each SSCP lane is on average, 160 passengers. Total throughput is effectively determined by the processing rate of the bag belts (as opposed to the walk through metal detectors). Since the events of September 11, 2001, security screening protocols have changed several times. Emerging technology and changing protocols will influence future SSCP requirements.

SSCP requirements are presented in **Table 4-16**. By 2028, the number of required checkpoints will increase by 3 lanes. The total 2028 screening area requirement of 11,700 square feet indicates a near doubling of the SSCP area is needed.

Table 4-16: Passenger Security Screening Requirements

	Existing	2008	2013	2018	2023	2028
Passenger Screening Checkpoints	6	5	6	7	8	9
Passenger Screening Area (Square Feet)	7,354	6,500	7,800	9,100	10,400	11,700
Area Deficiency (Square Feet)	--	--	446	1,746	3,046	4,346

Source: HNTB Analysis

4.4-5 Outbound Baggage and Baggage Screening Requirements

Following the baggage check-in process in the ticketing lobby, baggage is transported to the outbound baggage make-up and baggage screening area to be screened and sorted before being placed on an outbound aircraft. Specifically, baggage is taken off of the outbound baggage conveyor belts manually and are loaded onto the CTX machines and screened for explosives through the explosive detection screening (EDS) system.

Outbound baggage make-up requirements are driven by peak hour originating passengers. Based on data from comparable airports, the future planning factor for outbound baggage is 14.14 square feet per peak hour originating passenger. Explosive detection screening is directly related to the peaking characteristics observed for outbound baggage. The EDS planning factor is 7.13 square feet per peak hour originating passenger. The EDS requirements assume that the system becomes an in-line system where no manual baggage loading is required; a conveyor directly links the ticket counters to the CTX machines. The forecast outbound baggage and EDS facility requirements for PSP are presented in **Table 4-17** below.

The existing outbound baggage and EDS area is inefficiently organized and undersized, with a total area deficiency today of approximately 3,155 square feet. This deficiency will grow to approximately 16,834 square feet by 2028.

Table 4-17: Outbound Baggage Requirements

	Existing	2008	2013	2018	2023	2028
Outbound Baggage Make-up (Square Feet)	7,404	11,874	14,055	16,064	18,387	20,967
EDS In-Line Baggage Screening (Square Feet)	7,303	5,988	7,088	8,101	9,273	10,574
Area Deficiency (Square Feet)	--	3,155	6,436	9,458	12,953	16,834

Source: HNTB Analysis

4.4-6 Inbound Baggage Requirements

The inbound baggage system includes the stripping lanes where baggage removed from arriving aircraft is unloaded from tugs onto the bag belts for passengers to retrieve in the bag claim hall. Inbound baggage requirements are driven by the volume of peak hour terminating passengers.

As discussed in Chapter 2, the inbound baggage system is currently congested during peak passenger arrival periods. A principal problem is that the baggage stripping lanes are too close to one another. The distances between baggage carousels 1 and 2 and between baggage carousels 2 and 3 are 8 feet- 9 inches and 11 feet, respectively. The baggage stripping lanes, where baggage is placed onto bag belts from arriving aircraft, presents a problem for airline personnel when simultaneously unloading bag carts from different flights. The existing utilization factor for inbound baggage area is 3.03 square feet per peak hour terminating passenger. Based on facilities at comparable airports, the planning factor for inbound baggage is 11.50 square feet per peak hour terminating passenger.

Requirements based on the planning factor indicate a current deficiency of approximately 6,620 square feet. This deficiency will grow to 13,480 square feet when requirements reach 15,819 square feet in 2028. The inbound baggage requirement is presented in **Table 4-18**.

Table 4-18: Inbound Baggage Requirements

	Existing	2008	2013	2018	2023	2028
Inbound Baggage (Square Feet)	2,339	8,959	10,604	12,120	13,872	15,819
Inbound Baggage Deficiency	--	6,620	8,265	9,781	11,533	13,480

Source: HNTB Analysis

4.4-7 Baggage Claim Requirements

The baggage claim area requirements include baggage claim device frontage, the number of devices, baggage service office area, and baggage claim circulation area. The existing baggage claim area is approximately 13,247 square feet. The area includes 3 flat-bed baggage claim devices with a total linear frontage of approximately 675 feet, a 516 square foot baggage claim service office, and approximately 9,800 square feet of baggage claim circulation.

Baggage claim facility requirements are driven by peak hour terminating passengers. Observations of the overall baggage claim area during peak arrival periods revealed congested conditions with low levels of passenger convenience. Interviews with airport staff further confirm concerns regarding congestion levels within the existing bag claim area during peak periods.

The existing planning factor for baggage claim frontage is approximately 0.87 feet per peak hour terminating passenger. To improve the level of service and to better capture the unique baggage requirements of visitors to Palm Springs, a planning factor of 1.00 square foot per peak hour terminating passenger was utilized. The planning factor for determining the number of baggage claim devices required is based directly on the required linear frontage. The existing average linear frontage per device is approximately 225 feet. This factor is expected to hold constant throughout the planning horizon. Observations reveal baggage service office areas are deficient at PSP. The planning factor selected for baggage service offices is 1.97 square feet per peak hour terminating passenger. Required baggage claim circulation area is based on a planning factor of 12.6 square feet per peak hour terminating passenger. **Table 4-19** below presents the facility requirements for the baggage claim area through 2028. By 2028, the total baggage claim area will need to nearly triple in size from 13,247 square feet to 41,267 square feet in 2028. The same characteristics of PSP travelers that influence the volume of space required for bag check-in facilities also influence bag claim facilities. The higher than average volume of baggage and large size of baggage, including golf clubs, combined with the very busy peak season at PSP, will require a substantial expansion of PSP bag claim facilities. It should be noted, however, that these requirements are predicated on maintaining a high level of service, even during peak times.

Table 4-19: Baggage Claim Facility Requirements

	Existing	2008	2013	2018	2023	2028
Baggage Claim Frontage (Linear Feet)	675	779	922	1,054	1,206	1,376
Baggage Claim Devices	3	3	4	5	5	6
Baggage Service Office (Square Feet)	516	1,535	1,817	2,076	2,376	2,710
Baggage Claim Circulation (Square Feet)	9,834	9,815	11,619	13,279	15,199	17,332
Baggage Claim Total Area (Square Feet)	13,247	23,370	27,663	31,617	36,189	41,267
Baggage Claim Deficiency (Square Feet)	--	10,123	14,416	18,370	22,942	28,020

Source: HNTB Analysis

4.4-8 Concessions Requirements

A total of 11 concessionaires are located in the terminal pre-security and post-security areas, encompassing a total of 15,200 square feet. A determination of concession requirements is based on providing a high level of service for airport customers relative to PSP peer airports in the domestic U.S. market. Depending on the recommended terminal expansion plans, additional concessions may be added or existing concessions may be reconfigured.

4.4-9 International Facility Requirements

The Forecast of Aviation Activity does not forecast international air carrier flights from destinations other than Canada. Currently, all scheduled air carrier passengers traveling from Canadian airports to the United States clear customs prior to departure in Canada. Accordingly, there is no requirement for Customs and Border Protection (CBP) facilities for scheduled air carrier aircraft at PSP. The current facility, which caters exclusively to international general aviation arrivals, is capable of processing flights with a maximum of 15 passengers and crew. The alternatives analysis explores potential alternations to the existing international arrivals facility.

4.4-10 Terminal Facility Requirements Summary

Table 4-20 presents a summary of terminal facility requirements for Palm Springs International Airport broken down by functional area. The total processor size requirement is approximately 237,000 square feet representing 66% increase in area as compared to the existing 106,180 square feet.

Table 4-20: Processor Terminal Facility Requirements Summary

	Existing	2008	2013	2018	2023	2028
Gates	16	13	15	16	18	19
Ticketing	3	3	4	5	5	6
Ticket Counter Length (Lin. Feet)	248	206	244	278	319	363
Ticket Counter Area (Sq. Feet)	2,369	2,264	2,680	3,063	3,506	3,997
Ticket Counter Queuing (Sq. Feet)	2,384	4,116	4,872	5,568	6,374	7,268
Ticketing Circulation (Sq. Feet)	6,452	6,174	7,308	8,353	9,561	10,902
Airline Ticket Offices (Sq. Feet)	12,846	6,174	7,308	8,353	9,561	10,902
Passenger Security Screening						
Security Screening Checkpoint (lanes)	6	5	6	7	8	9
Security Screening Area (Sq. Feet)	7,354	6,500	7,800	9,100	10,400	11,700
Baggage Transfer						
Outbound Baggage Make-up (Sq. Feet)	7,404	11,874	14,055	16,064	18,387	20,967
Inbound Baggage (Sq. Feet)	2,339	8,959	10,604	12,120	13,872	15,819
EDS In-Line Baggage Screening (Square Feet)	7,303	5,988	7,088	8,101	9,273	10,574
Baggage Claim						
Baggage Claim Frontage (Lin. Feet)	675	779	922	1,054	1,206	1,376
Baggage Claim Devices	3	3	4	5	5	6
Baggage Service Office (Sq. Feet)	516	1,535	1,817	2,076	2,376	2,710
Baggage Claim Circulation (Sq. Feet)	9,834	9,815	11,619	13,279	15,199	17,332
Baggage Claim Total Area (Sq. Feet)	13,247	23,370	27,663	31,617	36,189	41,267
Public Area						
USO (Sq. Feet)	1,252	1,252	1,252	1,252	1,252	1,252
General Circulation (Sq. Feet)	24,325	11,611	14,338	16,388	18,757	21,390
Restrooms (Sq. Feet)	2,021	2,444	2,893	3,306	3,785	4,316
Concessions (Sq. Feet)	6,764	6,764	6,764	6,764	6,764	6,764
Non Public Area						
TSA Offices (Sq. Feet)	2,202	1,554	1,839	2,120	2,406	2,744
Airport Administration (Sq. Feet)	5,750	5,750	5,750	5,750	5,750	5,750
Airport Operations (Sq. Feet)	4,858	4,858	4,858	4,858	4,858	4,858
Other						
Mech/Elec/Maint/Storage (Sq. Feet)	7,529	15,271	17,738	19,953	22,515	25,361
Total Processor Area (Sq. Feet)	116,399	124,923	144,811	162,712	183,211	205,831
Total Processor Area Deficiency (Sq. Feet)		8,542	28,412	46,313	66,812	89,432

Source: HNTB Analysis

4.5 LANDSIDE FACILITY REQUIREMENTS

This section presents the airport landside facility requirements. The functional components of the airport landside include:

- Airport roadways
- Terminal curbside
- Parking facilities
- Rental car facilities

The facility requirements analysis determines the required capacities to accommodate the forecast passenger demand levels. A discussion of these requirements as it relates to providing an acceptable level of service (LOS) is also presented.

Summary of Forecast Passenger Demand

The Aviation Activity Forecast projects passenger activity levels to grow from an existing 1.55 million annual passengers (MAP) in 2008 to 1.83, 2.19, 2.50, and 2.85 MAP, respectively, in 2013, 2018, 2023, and 2028. While enplaned and deplaned passenger data on the average day peak month (ADPM) are used as the metric for determining terminal facility requirements, it is the peak hour origination and destination (O&D) passenger data which is typically used to determine landside facility requirements. O&D data excludes connecting and non-revenue passengers and is derived from ADPM passenger data. Enplaned and deplaned passenger data is used to determine landside facility requirements because O&D data is unavailable. The enplaned and deplaned passenger data comprises only a small percentage (1-2%) of connecting and non-revenue passengers which, for a high-level master planning purpose, is negligible.

Landside facility requirements are determined for the 2008, 2013, 2018, 2023, and 2028 planning activity years (referred as the planning horizon) and compared to a level of service deemed acceptable for the airport. Landside requirements are presented for four airport areas:

- Airport roadways – peak hour traffic volumes
- Terminal curbside - length of curb
- Parking facilities (public and employee) – number of stalls, acreage of facilities
- Rental car facilities - number of stalls, acreage of facilities (ready / return parking lot, service / quick turn-around (QTA), maintenance, and storage areas)

Roadway Level of Service

Level of service (LOS) is a lettered grade description of traffic operating conditions ranging from LOS A to LOS F. It is an indicator of the amount of congestion and delay on a particular roadway segment, intersection, or other study area. LOS for vehicular traffic is defined in terms of the volume to capacity ratio (V/C) (i.e. the existing or forecast volume of vehicles per hour (vph) (demand) divided by the maximum vehicles per hour (capacity) that a specific roadway segment or specific traffic study area can accommodate). A level of service with a grade A represents excellent, free-flow traffic conditions. A level of service with a grade F represents a critical failure of roadway conditions with slow speeds and considerable delays. As the vehicle capacity ratio (V/C) approaches 1.0, the roadway approaches LOS F. The roadway level of service definitions as set by the City of Palm Springs are shown in Table 4-21.

Table 4-21: Airport Roadway System Level of Service Definitions

Level of Service	Volume-to-Capacity Ratio	Definition
A	0.00 – 0.60	EXCELLENT – Free flow, light volumes
B	0.61 – 0.70	VERY GOOD – Free to stable flow, light to moderate volumes
C	0.71 - 0.80	GOOD – Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.81 – 0.90	FAIR – Approaches unstable flow, moderate to heavy volumes, limited freedom to maneuver
E	0.91 – 0.99	POOR – Extremely unstable flow, heavy volumes, maneuverability and psychological comfort extremely poor
F	≥ 1.00	FAILURE – Forced or breakdown conditions, slow speeds, tremendous delays with continuously increasing queue lengths

Source: City of Palm Springs General Plan

A roadway LOS C is typically regarded for airport landside planning efforts as an acceptable level of service to plan for. This level of service is characterized by moderate congestion levels during the busiest or peak periods of the day. Traffic operations during the remainder of the day typically operate at LOS A or B.

4.5-1 Airport Roadway System Requirements

The Airport roadway system comprises all on-airport property access and circulation roads, including the airport loop road that circulates traffic to and from the terminal area. Requirements are determined for all roadways, excluding those serving general aviation facilities, rental car quick turn-around facilities, and other support facilities not located near the terminal building, by comparing the existing and forecast ground transportation demand (measured in the volume of vehicles utilizing Airport roadways) to the existing and future capacity of the roadways.

Airport Roadway System Demand

Average daily traffic counts at on-airport access points provide demand information regarding volumetric (number of vehicles), spatial (location) and temporal (time) distributions of traffic generated by passengers and employees. Together with existing roadway capacity information, traffic volume information is used to evaluate roadway LOS, indicating efficiencies and deficiencies in the use of the roadway system. Considered jointly with air passenger activity levels, traffic volumes also provide benchmark information for determining airport trip generation rates, which are used to estimate future airport roadway traffic activity levels.

Existing 24-hour vehicular traffic volumes were collected via automated traffic recorders (ATR) placed at airport entrance and exit points between March 2009 and April 2009. As necessary, traffic volumes were estimated based on traffic volumes collected by airport staff between December 2007 and March 2008. The ATRs, each assigned with an identifying number, and the airport roadway system are shown in **Figure 4-6** and listed in **Table 4-22**.

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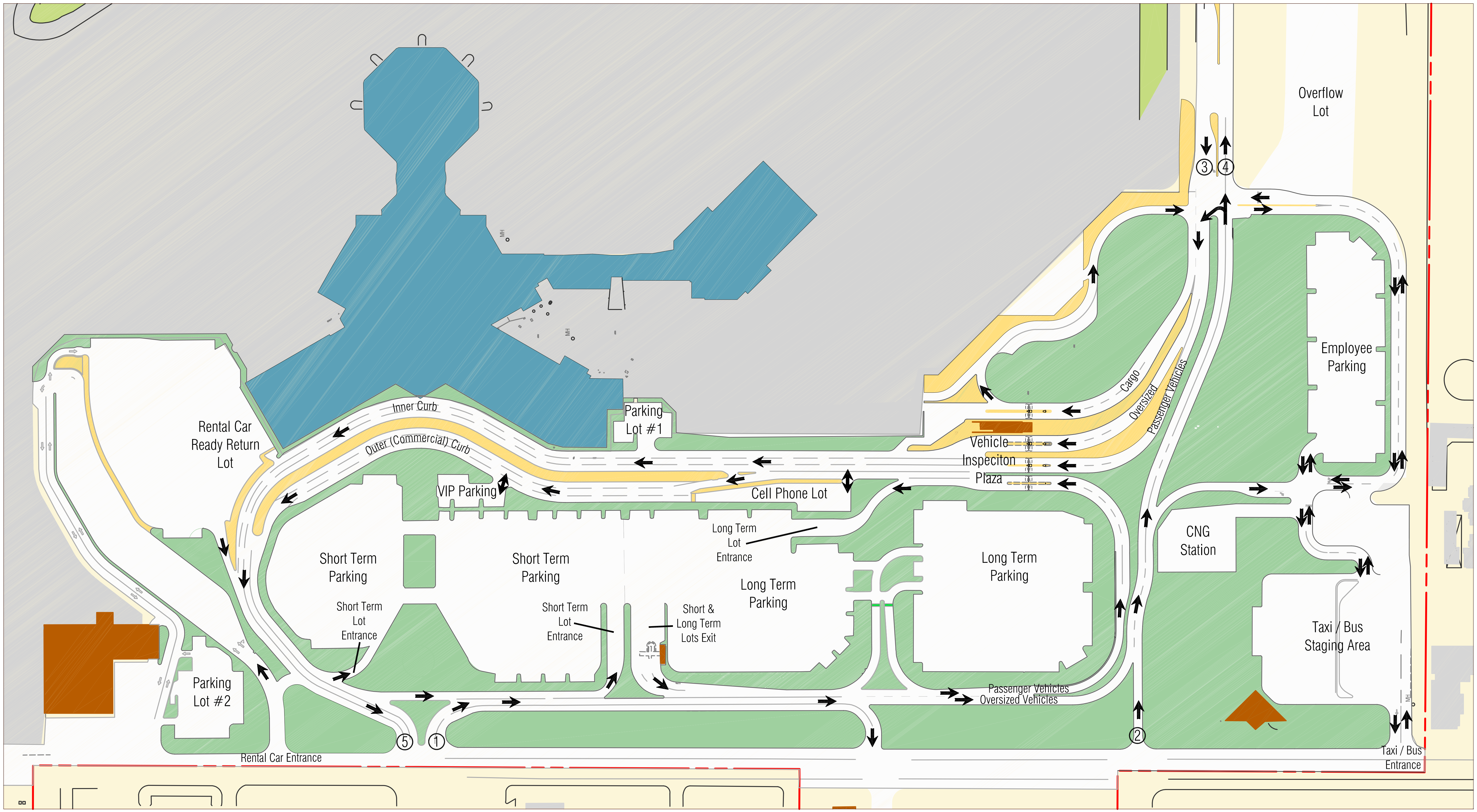


Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

Airport Access and Roadway Circulation System

Figure 4-6

Palm Springs International Airport
Master Plan

Table 4-22: 2009 Existing Traffic Volumes and Roadway Capacities at Airport Roadway Locations

ID	Airport Roadway Location	Average Daily Traffic Volume (ADT)	Peak Hour Traffic Volume*	No. of Lanes	Max Lane Capacity (vph / lane))	Max Roadway Capacity at LOS E (vph)	Roadway Capacity at LOS C (vph)
Entrances							
E1	East Tahquitz Canyon Way / South El Cielo Road	1,653	230	2	900	1,800	1,440
E2	Baristo Road (to Kirk Douglas Way)	2,816	483**	1	700	700	560
E3	Kirk Douglas Way (to the Airport)	2,806	422	2	900	1,800	1,440
E4	Rental Car Ready/Return Lot	626	132	1	700	700	560
E5	Taxi / Bus Staging Entrance (near the intersection of El Cielo Road and East Ramon Road)	284	64	1	700	700	560
Exits							
E6	Kirk Douglas Way (to Resort Cities)	5,083	641	2	900	1,800	1,440
E7	East Tahquitz Canyon Way / South El Cielo Road	2,039	522**	3	900	2,700	2,160
E8	Airport Loop Exit (near the intersection of El Cielo Road and Gary Kitchen Way)	745	111	1	700	700	560
E9	Taxi / Bus Staging Exit (near the intersection of El Cielo Road and East Ramon Road)	238	38	1	700	700	560
Entrance / Exit Total		**16,290****	**2,642**				
Airport Roadway Segments							
R1	Air Cargo Road	78	17	1	700	700	560
R2	Kirk Douglas Way to Terminal Curbside	2,993	469	3	900	2,700	2,160
R3	Airport Loop Road from East Tahquitz Canyon Way to Terminal Curbside	933	157	1	700	700	560
R4	Airport Loop Road from East Tahquitz Canyon Way to Baristo Road	2,150	295	1	700	700	560
R5	BaristoRoad to Employee Parking Lot	107	27	1	700	700	560
R6	Employee Parking Lot to Kirk Douglas Way	639	102	1	700	700	560
R7	Kirk Douglas Way to Employee Parking Lot	653	102	1	700	700	560
R8	Baristo Road to Kirk Douglas	5,073	751	2	900	1,800	1,440

ID	Airport Roadway Location	Average Daily Traffic Volume (ADT)	Peak Hour Traffic Volume*	No. of Lanes	Max Lane Capacity (vph / lane))	Max Roadway Capacity at LOS E (vph)	Roadway Capacity at LOS C (vph)
	Way						
Terminal Curbside							
C1	Inner Curb	4,589	631	3	900	2,700	2,160
C2	Outer Curb	840	115	3	900	2,700	2,160
Public Parking Lot							
PP1	Short-Term Lot South Entrance	114	36	1	700	700	560
PP2	Short-Term Lot North Entrance	502	91	1	700	700	560
PP3	Long-Term Lot Entrance	256	89	1	700	700	560
PP4	Short- and Long-Term Lot Exit	842	153	2	900	1,800	1,440
Employee Parking Lot							
EP1	Employee Parking Lot Entrance	150	28	1	700	700	560
EP2	Employee Parking Lot Exit	125	23	1	700	700	560
Rental Car Facility (adjacent to Terminal Building)							
RC1	Ready / Return Lot Exit to Airport Loop Road	656	135	1	700	700	560

Source: Palm Springs International Airport traffic count data (March 2009 – April 2009), HNTB Analysis
Note: * Peak hour traffic volume data were collected from a survey conducted in March 2009. The peak hour traffic volumes are adjusted based on an 11.82% decrease in passenger activity levels from March 2008 to March 2009. **Traffic volumes were estimated based on traffic data collected between March 2009 and April 2009 at nearby roadway locations.
Note: vph = vehicles per hour

Historical operations and air passenger data indicates March as the peak airport activity month. For the purposes of this study, the average daily traffic (ADT) traffic volume collected during the study period is used as a surrogate measure of the ADPM. Traffic counts indicate the peak hour for vehicular activity on airport roadways occurs between 10 AM and 12 PM along the airport loop road.

The ADT in both directions on airport roadways between March 11, 2009 and April 22, 2009 averaged 16,290 vehicles. Traffic volumes at the airport entrance at Baristo Road, airport exit at East Tahquitz Canyon Way, and Terminal Loop exit at the intersection of El Cielo Road and Gary Kitchen Way are estimated based on traffic volumes on nearby segments. The peak hour volume at the Airport is 2,642 vehicles. The ADT and peak hour traffic volumes at the airport entrance and exit locations are summarized in **Table 4-22**.

Trip Generation

Daily and peak hour trip generation rates are used to estimate future roadway traffic volumes based on existing (2008) ADT volumes and air passenger activity levels. Mathematically, the daily trip generation rate, assumed to remain constant through the planning horizon (e.g. no change in traffic or roadway conditions), is determined for PSP by dividing the ADT of 16,290 vehicles by the average annual day enplaning and deplaning passengers of 4,241 passengers. The resulting trip generation rate is 3.841 vehicles per day (VPD) per passenger. The peak hour ratio is mathematically determined by dividing the peak hour traffic volume by the ADT, resulting in a ratio of approximately 16%. This rate represents the ratio for all roadways and is applied to future air passenger activity levels to obtain future traffic volumes. The trip generation rates and resulting future traffic are shown in Table 4-23. Average daily and peak hour traffic volumes will nearly double by 2028.

Table 4-23: Airport Roadway System Trip Generation Rates

	2008	2013	2018	2023	2028
Airport Activity Level					
Annual Passengers (enplaned and deplaned)	1,548,112	1,827,801	2,185,020	2,500,900	2,851,937
Average Daily Passengers	4,241	5,008	5,986	6,852	7,814
Airport Roadway Trip Generation					
Average Daily Terminal Traffic (ADT)	16,290	19,233	22,992	26,317	30,009
Trip Rate (ADT / Average Daily Passengers)	3.841	3.841	3.841	3.841	3.841
Peak Hour Ratio	~16%	~16%	~16%	~16%	~16%
Actual Peak Hour Traffic	2,363	2,790	3,335	3,817	4,353
Adjusted Peak Hour Traffic*	2,642	3,120	3,729	4,269	4,868

Source: HNTB Analysis

Note: * Actual peak hour traffic volume data were collected from a survey conducted in March 2009. The actual peak hour traffic volumes are adjusted based on a 11.82% decrease in passenger activity levels from March 2008 to March 2009.

Airport Roadway System Capacity

The future capacity of the airport roadway system is determined for each roadway segment based on, the peak hour ratio, number of lanes, and the industry standard maximum lane capacity of 900 vehicles per hour per lane for roads with 2 or more lanes and 700 vehicles per hour for roads with 1 lane. The maximum lane capacity is determined based on the typical usage of the road and vehicle speeds. To determine the roadway segment capacity at a LOS C, the roadway segment capacity is multiplied by 80%, representing traffic conditions characteristic of a stable flow, moderate volumes and where the freedom to maneuver is noticeably restricted. The existing roadway capacity for each roadway segment is summarized in Table 4-22. The existing and future peak hour traffic and level of service for each roadway segment is summarized in Table 4-24.

Table 4-24: Airport Roadway System – Existing and Future Levels of Service

	Roadway Segment	Peak Hour Traffic (vph)					Level of Service				
		2008	2013	2018	2023	2028	2008	2013	2018	2023	2028
Airport Entrances											
E1	East Tahquitz Canyon Way / South El Cielo Road	230	272	325	372	424	A	A	A	A	A
E2	Baristo Road (to Kirk Douglas Way)	483	570	682	780	890	D	F	F	F	F
E3	Kirk Douglas Way (to the Airport)	422	498	595	681	777	A	A	A	A	A
E4	Rental Car Ready/Return Lot	132	156	186	213	243	A	A	A	A	A
E5	Taxi / Bus Staging	64	75	90	103	117	A	A	A	A	A
Airport Exits											
E6	Kirk Douglas Way (to Resort Cities)	641	756	904	1,035	1,180	A	A	B	C	D
E7	East Tahquitz Canyon Way / South El Cielo Road	522	617	737	844	962	A	A	A	A	A
E8	Airport Loop Exit	111	131	156	179	204	A	A	A	A	A
E9	Taxi / Bus Staging	38	45	54	61	70	A	A	A	A	A
Airport Roadway Segments											
R1	Air Cargo Road	17	20	24	27	31	A	A	A	A	A
R2	Kirk Douglas Way to Terminal Curbside	469	553	661	757	863	A	A	A	A	A
R3	Airport Loop Road from East Tahquitz Canyon Way to Terminal Curbside	157	185	221	253	288	A	A	A	A	A
R4	Airport Loop Road from East Tahquitz Canyon Way to Baristo Road	295	349	417	477	544	A	B	C	D	E
R5	Baristo Road to Employee Parking Lot	27	32	38	43	49	A	A	A	A	A
R6	Employee Parking Lot to Kirk Douglas Way	102	120	144	164	187	A	A	A	A	A
R7	Kirk Douglas Way to Employee Parking Lot	102	120	144	164	187	A	A	A	A	A
R8	Baristo Road to Kirk Douglas Way	751	887	1,061	1,214	1,384	A	B	C	D	E
Terminal Curbside											
C1	Inner Curb	631	745	890	1,019	1,162	A	A	A	A	B
C2	Outer Curb	115	136	163	186	212	A	A	A	A	A
Public Parking Lot											
PP1	Short-Term Lot South Entrance	36	42	51	58	66	A	A	A	A	A
PP2	Short-Term Lot North Entrance	91	107	128	146	167	A	A	A	A	A

	Roadway Segment	Peak Hour Traffic (vph)					Level of Service				
		2008	2013	2018	2023	2028	2008	2013	2018	2023	2028
PP3	Long-Term Lot Entrance	89	106	126	145	165	A	A	A	A	A
PP4	Short- and Long-Term Lot Exit	153	181	216	247	282	A	A	A	A	A
Employee Parking Lot											
EP1	Employee Parking Lot Entrance	28	33	39	45	51	A	A	A	A	A
EP2	Employee Parking Lot Exit	23	28	33	38	43	A	A	A	A	A
Rental Car Facility (adjacent to Terminal Building)											
RC1	Ready/Return Lot Exit to Airport Loop Road	135	160	191	219	249	A	A	A	A	A

Source: HNTB Analysis
Notes: vph = vehicles per hour

Airport Roadway System Requirements

Peak hour traffic volumes are highest at airport entrances via Kirk Douglas Way (16%) and Baristo Road (18%). The LOS on Kirk Douglas Way will remain at a LOS A through 2028. The Baristo Road segment is currently at an unacceptable LOS D. Contributing to this traffic are vehicles entering the Airport from the west directly onto Baristo Road and from East Tahquitz Canyon Way on the loop road. The LOS on Baristo Road will reach LOS F by 2013. It is believed most of this traffic is not airport-related, but rather bypass traffic from the surrounding community. One possible solution to prevent the bypass traffic is to close the entrance at Baristo Road.

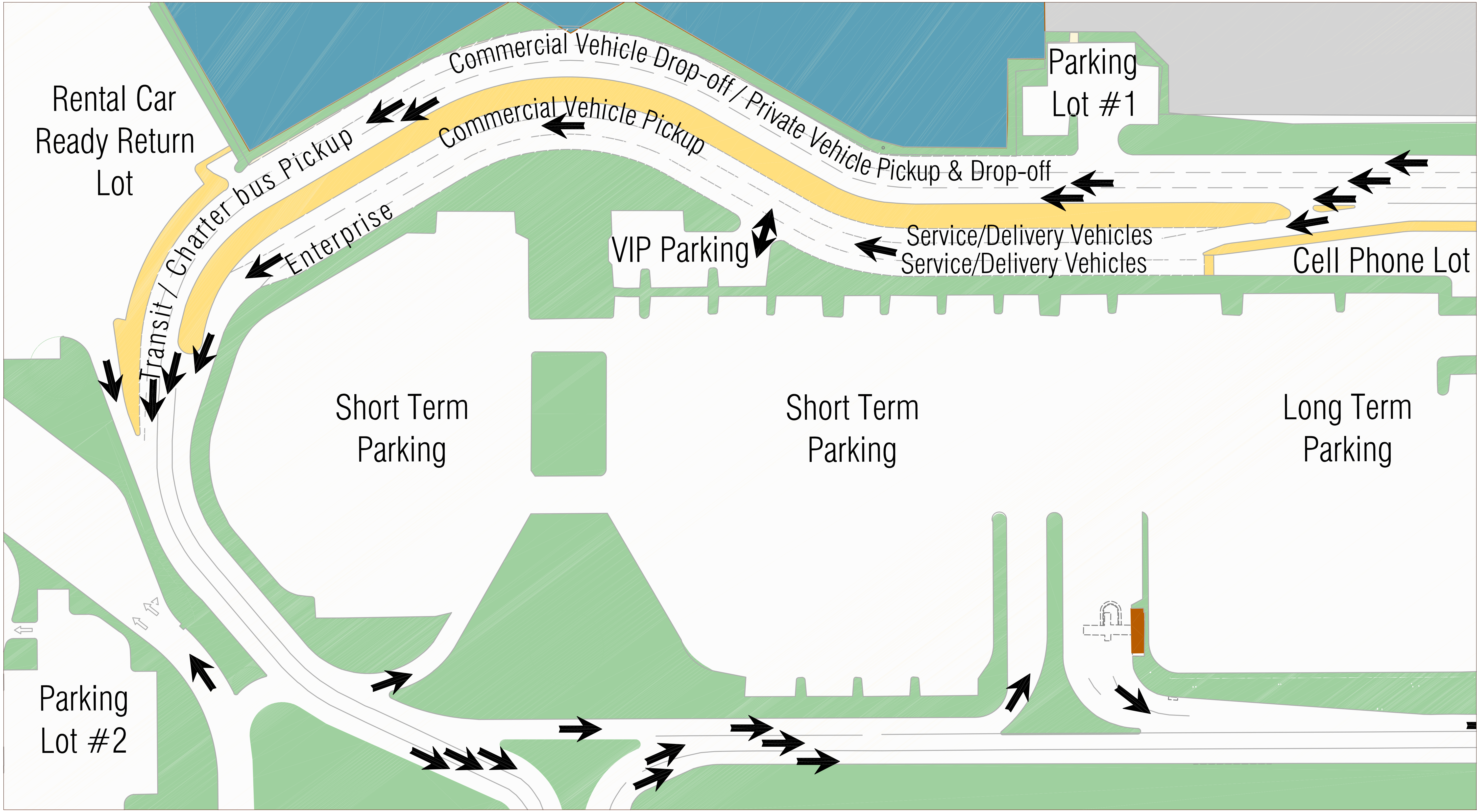
Peak hour traffic volumes are highest at airport exists via East Tahquitz Canyon Way (20%) and Kirk Douglas Way (24%). The LOS on East Tahquitz Canyon Way will remain at a LOS A through 2028. Traffic levels for the Airport exit on Kirk Douglas Way will reach LOS D sometime around 2028 when the total annual passenger count climbs above 2.85 million annual passengers. Much of this traffic may be reduced by the closure of the airport entrance at Baristo Road.

4.5-2 Terminal Curbside Requirements

Terminal curb requirements are determined to accommodate the forecast volume of passengers. Requirements are developed for the terminal curbside based on passenger activity levels and the number of and usage of ground transportation vehicles at the terminal curbside. Requirements are developed specifically in the area where passengers are picked-up and dropped off and where vehicles drive through the terminal curbside area.

Curbside Passenger Pick-up and Drop-off Area

The Airport terminal curbside area consists of two curbs, the inner (private vehicle) curb and the outer (commercial vehicle) curb. The terminal curbside layout and the allocation of vehicles at each curbside are shown in Figure 4-7 and are described in Table 4-25. The modal splits are summarized by mode and specified curbside in Table 4-26.


Rental Car Ready Return Lot
Commercial Vehicle Drop-off / Private Vehicle Pickup & Drop-off
Parking Lot #1
Commercial Vehicle Pickup
Transit / Charter bus Pickup
Enterprise
VIP Parking
Service/Delivery Vehicles
Service/Delivery Vehicles
Cell Phone Lot
Short Term Parking
Short Term Parking
Long Term Parking
Parking Lot #2

Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

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Terminal Curbfront Ground Transportation Vehicle Allocation

Figure 4-7

Palm Springs International Airport
Master Plan

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Table 4-25: Terminal Curbs and Associated Vehicle Types

Terminal Curb	Vehicle Types
Inner (Passenger Vehicle) Curb	*Private vehicles* – pick-up and drop-off (attended parking) *Taxi* – drop-off (attended parking) *Limo* – drop-off (attended parking) *Hotel / Motel shuttle* – drop-off (attended parking) *For-hire van / shuttle* – drop-off (attended parking) *Charter / Tour buses* – pick-up and drop-off (attended parking) *Transit buses* - pick-up and drop-off (attended parking) *Airport operations and security* - (unattended parking)
Outer (Commercial Vehicle) Curb	*Taxi* – pick-up (attended parking – queue) *Limo* – pick-up (attended parking) *Hotel / Motel shuttle* – pick-up and drop-off (attended parking) *For-hire van / shuttle* – pick-up (attended parking) *Rental car shuttle* – pick-up and drop-off (attended parking) *Airport operations and security* - (unattended parking) *Service / Delivery vehicles*- loading and unloading (unattended parking)

Source: HNTB Analysis

Table 4-26: Terminal Curb Mode Splits

Mode	Mode Split	Location	Inner / Outer Curb Split
Private Vehicle	89.42%	Inner Curb Drop-off	52%
		Inner Curb Pick-up	48%
Taxi	5.89%	Inner Curb Drop-off	33%
		Outer Curb Pick-up	67%
Limo	0.68%	Inner Curb Drop-off	75%
		Outer Curb Pick-up	25%
Hotel / Motel Shuttle	1.11%	Inner Curb Drop-off	15%
		Outer Curb Drop-off / Pick-up	84%
Rental Car Shuttle	0.60%	Outer Curb Drop-off / Pick-up	100%
For-Hire Van / Shuttle	0.77%	Inner Curb Drop-off	78%
		Outer Curb Pick-up	22%
Charter / Tour Bus	0.26%	Inner Curb Drop-off / Pick-up	100%
Public Transit Bus	0.01%	Inner Curb Drop-off / Pick-up	100%
Airport Operations and Security Vehicles	0.68%	Inner Curb	50%
		Outer Curb	50%
Service / Delivery Vehicles	0.60%	Outer Curb Loading / Unloading	100%

Source: HNTB Analysis, Vehicle Classification Survey conducted March 18, 2009

Curbside Passenger Pick-up and Drop Off Area Demand

Traffic volumes at the terminal curbside were collected via traffic counting devices between March 2009 and April 2009. The existing average daily number of vehicles at the terminal curbside total 3,534 vehicles, with an estimated (based on the ratio of vehicles at the inner and outer curbs taken from traffic counts collected in December 2007 to March 2008) 2,987 vehicles utilizing the inner curb and 547 utilizing the outer curb. Future average daily traffic volumes are determined by multiplying a trip generation rate (vehicles per passenger per day) to future passenger activity levels.

The existing peak hour number of vehicles at the terminal curbside totals 667 vehicles. Future peak hour traffic volumes are determined by multiplying the peak hour traffic volume ratio (peak hour traffic volume divided by the average daily traffic volume) to future passenger activity levels. Peak hour traffic data collected in 2009 are adjusted to levels in 2008. Existing and future terminal curbside demand is summarized in **Table 4-27**. Finally, the levels of service definitions for the terminal curbside are shown in **Table 4-28.**

Table 4-27: Terminal Curbside Demand

Terminal Traffic Forecasts	**2008**	**2013**	**2018**	**2023**	**2028**
Airport Activity Level					
Annual Passengers (enplaned and deplaned)	1,548,112	1,827,801	2,185,020	2,500,900	2,851,937
Average Daily Passengers	4,241	5,008	5,986	6,852	7,814
Peak Hour Passengers	573	676	808	925	1,055
Terminal Activity Level					
Average Daily Terminal Traffic (ADT)	3,534	4,172	4,988	5,709	6,510
Inner (Passenger Vehicle) Curb	2,987	3,527	4,216	4,826	5,503
Outer (Commercial Vehicle) Curb	547	646	772	883	1,007
Trip Rate (ADT / O&D Passengers)	0.833	0.833	0.833	0.833	0.833
Peak Hour Ratio	~18.9%	~18.9%	~18.9%	~18.9%	~18.9%
Actual Peak Hour Traffic (2009)	667	778	941	1,078	1,229
Adjusted Peak Hour Traffic (2008)*	746	881	1,053	1,205	1,374

Source: HNTB Analysis

Note: * The actual peak hour traffic data is taken from 2009 data. It is adjusted based on a 11.82% decrease in passenger activity levels between March 2008 and March 2009.

Table 4-28: Terminal Curbside Level of Service Definitions

Level of Service	**Volume-to-Capacity Ratio**	**Definition**
A	≤1.00	Drivers experience free flow conditions and can park anywhere at the curbside without interference.
B	1.01 – 1.10	Drivers experience relatively free flow conditions and can park with some interference (double parking can be observed).
C	1.11 - 1.30	Drivers experience some unstable flow and double parking is common. This LOS is considered appropriate for peak period design conditions at major airports.
D	1.31 – 1.70	Drivers experience more unstable flow with some interference (triple parking can be observed).
E	1.71 – 2.00	Drivers experience extremely unstable flow with frequent double and triple parking throughout the entire curbside area.
F	≥ 2.00	Drivers are unable to access the curbside and with vehicles stopped.

Source: City of Palm Springs General Plan

Trip Generation

Applying the same methodology and assumptions used to determine airport roadway requirements, the trip generation rate for the terminal curbside is 0.833 vehicles per day (VPD) per passenger.

Curbside Passenger Pick-up and Drop Off Area Capacity and Requirements

Terminal curbside requirements include the length of the curb necessary to meet forecast passenger activity levels. The terminal curbside length requirement is determined based on the peak hour number of vehicles utilizing the curbside, the types of vehicles utilizing the curbside, and how long each vehicle on average remains at the curbside (dwell time). Existing vehicle dwell times are based on data collected in March, 2009 by HNTB Corporation. The average dwell time is the amount of time each vehicle occupies a stall at the curbside (approximately 1.5 minutes).

Based on the amount of space each vehicle takes up (stall length), requirements for the total number of stalls and overall curb length are determined and shown in **Table 4-29**. The standard stall length for each vehicle type includes the space for a vehicle to maneuver into the stall. The standard vehicle stall lengths by vehicle type are listed below.

• Privately owned vehicles and taxis	25 feet
• Limos	30 feet
• Hotel / motel shuttles, rental car shuttles, for-hire vans and shuttles, and airport operations and security vehicles	35 feet
• Service and delivery vehicles	40 feet
• Charter, tour, and public transit buses	60 feet

Table 4-29: Existing Terminal Curb Demand and Capacity Requirements

		Existing Peak Hour Volumes*	Vehicle Dwell Time (min)**	Required Vehicle Stalls***	Standard Vehicle Stall Length (feet)	Required Curb Length (feet)
Inner (Private Vehicle) Curb		**697**				
Private vehicle	*Drop-off*	347	1.89	17	25	425
	Pick-up	320	1.11	10	25	250
Taxi	*Drop-off*	15	1.91	2	25	50
Limo	*Drop-off*	4	0.97	1	30	30
Hotel / Motel Shuttle	*Drop-off*	1	0.53	1	35	35
For-Hire Van / Shuttle	*Drop-off*	5	3.08	1	35	35
Charter / Tour Bus	*Drop-off / Pick-up*	2	5.13	2	60	60
Public Transit Bus	*Drop-of / Pick-up*	0	1.5	1	60	60
Airport Operations / Security Vehicle						
	Inner Curb	3	-	1	35	35
	Total Demand	**697**				
	LOS C Requirement ****					**754**
Outer (Commercial Vehicle) Curb		**49**				
Taxi	*Pick-up (queued)*	29	1.91	6	20	120
Limo	*Pick-up*	1	0.97	1	30	30
Hotel / Motel Shuttle	*Drop-off / Pick-up*	7	1.11	1	35	35
Rental Car Shuttle	*Drop-off / Pick-up*	4	1.63	1	35	35
For Hire Van / Shuttle	*Pick-up*	1	3.08	1	35	35
Airport Operations / Security Vehicle		3	-	1	35	35
Service / Delivery Vehicle		4	5.13	1	40	40
	Total Demand / Requirement					**330**

Source: HNTB Analysis

Notes: * Peak hour volumes are based the multiplication of the 1) existing peak hour traffic mode splits (collected March 2009 by HNTB Corporation), and 3) share of peak hour passengers during the average day peak month. The existing peak hour vehicle counts were adjusted based on the change in passenger activity levels between March 2008 and 2009 to reflect 2008 data. ** Dwell times were collected March 2009 by HNTB Corporation. *** A calculated number of vehicle stalls was determined based on the peak hour vehicle trips and dwell times. A poisson distribution was applied to the calculated number of vehicles to account for randomness. **** A 130% utilization was assumed for the inner curb to account for double parking.

The existing length of the inner and outer curb for passenger pick-up and drop-off, respectively, are 1,056 (two 12' lanes - one curbside lane allowing for double parking) and 1,512 feet (two 12' lanes, one on either side of the outer lane). The existing curb length demand in 2008 is 980 feet for the inner curb and 330 feet for the outer curb. The current utilization of the inner and outer curbs, respectively are 71% and 22%. However, to plan for curbside conditions at a LOS C, the utilization factor is increased to 130% to account for double parking in the inner curb. The utilization factor of the outer curb is set at 100% as commercial vehicles do not double park. The resulting existing requirement is 754 feet for the inner curb with a peak hour vehicle throughput of 697 vehicles and 330 feet for the outer curb with a peak hour vehicle throughput of 49 vehicles.

The capacity of the existing curb is adequate to meet existing peak hour demand, with a surplus of 302 feet in the inner curb and 1,182 feet in the outer curb. The curbside requirements assume vehicles do not stop at multiple points along the curbside as may occur at airports with multiple terminals.

The demand and LOS C requirements for the planning horizon are determined based on the observed peak hour traffic collected during a survey conducted in March, 2009 by HNTB Corporation, adjusted from 2009 to 2008 based on (11.82% increase in vehicles). The existing terminal curb demand and LOS C requirements by mode are shown in **Table 4-30** and summarized for 2028 in **Table 4-31**. The requirements assume mode share and vehicle occupancies are constant through the planning horizon.

Table 4-30: Peak Hour Traffic Volumes and Terminal Curbside Length Demand by Mode

		2008		2013		2018		2023		2028	
Inner Curb		# Peak Hour Vehicles	Curb Length (feet)	# Peak Hour Vehicles	Curb Length (feet)	# Peak Hour Vehicles	Curb Length (feet)	# Peak Hour Vehicles	Curb Length (feet)	# Peak Hour Vehicles	Curb Length (feet)
Private vehicle	*Drop-off*	347	425	409	475	489	550	560	625	639	700
	Pick-up	320	250	378	300	452	325	517	375	590	425
Taxi	*Drop-off*	15	50	17	50	21	50	24	50	27	75
Limo	*Drop-off*	4	30	5	30	5	30	6	30	7	30
Hotel / Motel Shuttle											
	Drop-off	1	35	2	35	2	35	2	35	2	35
For-Hire Van / Shuttle											
	Drop-off	5	35	5	35	6	35	7	70	9	70
Charter / Tour Bus											
	Drop-off / Pick-up	2	60	2	60	3	60	3	60	4	60
Public Transit Bus											
	Drop-off / Pick-up	0	60	0	60	0	60	0	60	0	60
Airport Operations / Security Vehicle		3	35	3	35	4	35	4	35	5	35
	Total Demand	**697**	**980**	**821**	**1,080**	**982**	**1,180**	**1,123**	**1,340**	**1,283**	**1,490**
	Total Curb Length LOS C Requirement		**754**		**831**		**908**		**1,031**		**1,146**
Outer Curb											
Taxi	*Pick-off (queued)*	29	120	35	140	41	160	47	180	54	200
Limo	*Pick-up*	1	30	2	30	2	30	2	30	2	30
Hotel / Motel Shuttle											
	Drop-off / Pick-up	7	35	2	35	2	35	2	35	2	35
Rental Car Shuttle											
	Drop-off / Pick-up	4	35	5	35	6	35	7	35	8	35
For-Hire Van / Shuttle											
	Drop-off / Pick-up	1	35	2	35	2	35	2	35	2	35
Airport Operations / Security Vehicle		3	35	3	35	4	35	4	35	5	35
Service / Delivery Vehicle		4	40	5	80	6	80	7	80	8	80
Total Demand / Requirement		**49**	**330**	**54**	**390**	**63**	**410**	**71**	**430**	**81**	**450**

Source: HNTB Analysis

Table 4-31: Existing and Future Terminal Curbside Length Requirements

	2008	2013	2018	2023	2028
Inner Curb					
Demand (feet)	980	1,080	1,180	1,340	1,490
Capacity (feet)	1,056	1,056	1,056	1,056	1,056
Demand / Capacity Ratio	0.92	1.02	1.12	1.27	1.41
LOS	A	B	C	C	D
LOS C Requirement	754	831	908	1,031	1,146
Surplus / (Deficit) (feet)	302	225	148	25	(90)
Outer Curb					
Demand (feet)	330	390	410	430	450
Capacity (feet)	1,512	1,512	1,512	1,512	1,512
Demand / Capacity Ratio	0.22	0.26	0.27	0.28	0.30
LOS	A	A	A	A	A
Surplus / (Deficit) (feet)	1,182	1,122	1,102	1,082	1,062

Source: HNTB Analysis

In the inner curb, the LOS C requirement for the curbside length reaches 1,146 feet in 2028 with a peak hour vehicle throughput of 1,283 vehicles. At a LOS C, 90 feet of additional curb length is required in 2028. In the outer curb, a LOS A is obtainable through the planning horizon. In 2028, the outer curb length demand is 450 feet. With the existing capacity of 1,512 feet, the outer curb has a surplus of 1,062 feet. The capacity of the inner and outer curb is sufficient to accommodate vehicles at the curbside through the planning horizons at a LOS C with the exception of the inner curb, which will need to be increased by 90 feet in 2028 to accommodate LOS C requirements for the inner curb.

Curbside Travel Lanes

The vehicle throughput demand in the through or travel lanes determines whether new lanes will be required in the planning horizon. **Table 4-30** shows the peak hour throughput demand. It is assumed for planning purposes the capacity of the lanes is as follows:

- First Travel Lane: 300 vehicles
- Second Travel Lane: 600 vehicles
- Third and any Subsequent Travel Lane: 900 vehicles (currently non-existent at PSP)

Given the capacity of the throughput, or travel lanes, one additional through lane will be required in the inner curb as early as 2018 to accommodate a deficiency of 82 vehicles. With a vehicle throughput demand of 1,490 vehicles, one lane remains sufficient to accommodate the deficiency of 590 vehicles. This may be possible by reconfiguring the inner and outer curb to meet demand requirements. No additional lanes are required in the outer lane through the planning horizon.

4.5-3 Airport Parking Requirements

Parking requirements are determined for the public parking (short- and long-term) and employee parking lots. Requirements include parking stall requirements and acreages.

Public Parking

Traffic volume data collected at parking lot entrances and exits and passenger activity levels are used to determine public parking demand. Transaction data (tickets issued or processed) in 2008 and 2009 indicate March as the peak month for parking activity. Traffic counts were collected at the short-term and long-term parking lot entrances and exits during an average week in March 2009 (March 18th, 2009 – March 25th 2009). Adjusted to 2008 activity levels, the average day peak month number of transactions is 950 transactions in the short-term parking lot and 195 transactions in the long-term parking lot. In determining the number of transactions, it is assumed all hourly parking of less than 1-day occurred in the short-term parking lot. Future parking transaction demand is determined by applying the constant ratio of the existing number of transactions to passengers to future passenger activity levels. The distribution of transactions between the two parking lots and parking rates are assumed to remain constant throughout the planning horizon.

To obtain parking stall requirements, transactional demand is determined by dividing the transactions during the average day of the peak month by the number of turns per stall. The number of turns per stall is determined by the total parking transaction demand during the average day of the peak month divided by the peak hour parking stall demand. The analysis indicates 3.83 turns per stall in the short-term lot and 0.45 turns per stall in the long-term lot. Finally, assuming a maximum of 90% of the parking facilities are used to provide a 10% search factor, parking stall requirements are determined. The resulting transaction and stall demand, as well as the parking stall requirements are summarized in Table 4-32.

Table 4-32: Public Parking Demand and Requirements

	Existing Supply	2008	2013	2018	2023	2028
Airport Activity Level						
Annual Passengers (enplaned and deplaned)	-	1,548,112	1,827,801	2,185,020	2,500,900	2,851,937
Average Daily Passengers	-	4,241	5,008	5,986	6,852	7,814
Parking Transactions (ADPM)						
Short-Term Lot	-	950	1,122	1,341	1,535	1,750
Long-Term Lot	-	195	230	275	315	359
Public Parking Transactions/Passenger						
Short-Term Lot	-	0.224	0.224	0.224	0.224	0.224
Long-Term Lot	-	0.046	0.046	0.046	0.046	0.046
Public Parking Stall Requirement						
Short-Term Lot	377	275	325	388	444	507
Long-Term Lot	538	480	567	677	775	884
Total Stalls	915	755	891	1,066	1,220	1,391
Public Parking Area Requirement (acres)**						
Short-Term Parking Area (Acres)	3.86	2.53	2.98	3.56	4.08	4.65
Long-Term Parking Area (Acres)	4.78	4.41	5.21	6.23	7.13	8.13
Total Acres	8.64	6.93	8.19	9.79	11.20	12.77
Surplus / (Deficiency)						
Short-Term Parking Stalls	-	102	52	(11)	(67)	(130)
Long-Term Parking Stalls	-	58	(29)	(139)	(237)	(346)
Total Stalls	-	**160**	**24**	**(151)**	**(305)**	**(476)**
Short-Term Parking Area (Acres)	-	1.33	0.88	0.30	(0.22)	(0.79)
Long-Term Parking Area (Acres)	-	0.37	(0.42)	(1.44)	(2.34)	(3.34)
Total Acres	-	**1.71**	**0.45**	**(1.15)**	**(2.56)**	**(4.13)**

Source: HNTB Analysis

Note: * ADPM = Average Day Peak Month **Each stall, including maneuvering room and lane spacing are planned to total 400 square feet.

The existing capacity of the public parking lots is 377 in the short-term lot and 538 in the long-term lot, for a total of 915 parking stalls. Parking stall requirements indicate a need for 507 in the short-term lot and 884 in long-term lot stalls, resulting in a deficiency, respectively, of 130 and 346 stalls. It is recommended additional parking facilities be constructed to accommodate the deficiency of 476 stalls in 2028, but as early as 2018 to accommodate the deficiency of 150 stalls.

Finally, assuming a stall size of 400 square feet per stall based on current utilization that is held constant throughout the planning horizon, the total number of acres required for public parking facilities totals 12.77 acres in 2028. With respect to the public parking stall and acreage requirements public parking facilities will start to be deficient as early as 2013 in the long-term public parking lot and as early as 2018 in the short-term public parking lot.

Employee Parking

Employee parking requirements are determined based on the ratio of existing employee parking supply to annual passenger activity levels at PSP, and adjusted for observed parking occupancies. PSP currently provides 210 employee parking stalls, resulting in a current utilization of approximately 136 employee parking spaces per million annual enplaned and deplaned passengers (MAP).

Currently the demand for employee parking stalls is greater than the supply. Interviews conducted with airport staff indicate many employees park their vehicles elsewhere because the lot is oftentimes full and that employees are concerned about their safety because the location of the employee parking lot requires them to cross heavily trafficked Kirk Douglas Way to the terminal building. To account for this, the employee parking demand assumes a 100% occupancy rate for the existing employee parking lot, but applies a 90% occupancy as the target demand occupancy for the employee parking lot. In addition, the analysis applies a 1.40 surge factor to account for employee shift changes.

Accounting for parking utilization observations at PSP, the current employee parking lot utilization ratio translates to approximately 211 (136*1.40*1.00 / 0.90) stalls per MAP. With the assumption that the growth in employees matches the growth in air passengers, this ratio, assumed to remain constant through the planning horizon, is applied to future passenger activity levels to determine future employee parking requirements. Acreage requirements are determined from stall requirements by assuming each stall is 350 square feet in area. Employee parking stall and acreage requirements are summarized in Table 4-33. Employee parking facilities are deficient today by approximately 117 stalls or 0.94 acres. By 2028, this deficiency will grow to 391 stalls and 3.14 acres.

Table 4-33: Employee Parking Requirements

	Existing Supply	2008	2013	2018	2023	2028
Airport Activity Level						
Annual Passengers (enplaned and deplaned) (MAP)	-	1.55	1.83	2.19	2.50	2.85
Employee Parking Stalls per MAP	-	211	211	211	211	211
Employee Parking Stall Requirement	210	327	386	462	528	601
Employee Parking Stall Deficiency	-	117	176	252	318	391
Employee Parking Acreage Requirement*	1.69	2.63	3.10	3.71	4.24	4.83
Employee Parking Acreage Deficiency	-	0.94	1.41	2.02	2.56	3.14

Source: HNTB Analysis

Note: * Employee parking stall requirements are based on a stall size of 350 square feet per stall.

4.5-4 Rental Car Facility Requirements

Rental car facility requirements are determined for both on-Airport and off-Airport rental car facilities. On-Airport rental car companies include Hertz, National, Avis, Dollar, and Budget. Enterprise is located off-Airport. Rental car requirements are presented for:

- Customer service area
- Ready / return stalls and area, and
- Vehicle Service / Maintenance / Storage area.

Existing Rental Car Facility

Approximately 90% of rental car facilities and activity occurs on airport property. On-airport rental car facilities at the airport include the customer service area (rental counters) adjacent to baggage claim areas inside the terminal building, ready / return parking lot located adjacent to the baggage claim area outside the terminal building, and rental car service (quick-turn around), storage, and maintenance facilities located along North and East Civic Drive. All rental car service providers at PSP utilize the on-airport ready / return parking lot with the exception of Enterprise, which operates their facility approximately one mile from the Airport, near the intersection of Kirk Douglas Way and Ramon Road. The areas of the rental car facilities are summarized in **Table 4-34**.

Table 4-34: Existing On-Airport Rental Car Facilities

	Square Feet	Acres	Stalls
Customer Service Area			
Main Terminal	2,837	-	-
Enterprise*	2,473	-	-
Total	**5,310**	**-**	-
Ready / Return Area			
Adjacent to Main Terminal Baggage Claim	148,396	3.41	449
Enterprise*	16,077	0.64	46
Total	**164,473**	**3.78**	**495**
Vehicle Service / Maintenance / Storage Areas			
Hertz, National, Avis, Dollar, Budget	323,862	7.43	-
Enterprise*	17,433	0.40	-
Total	**341,295**	**7.84**	-
Grand Total	**511,078**	**11.73**	-

Source: HNTB Analysis

Notes: * The data for the Enterprise facility was obtained via analysis of aerial photography and airport layout plan.

Rental Car Customer Service Facility Requirements

Customer service rental car facility requirements, where rental car reservations, rental car offices, and other customer service related activities are carried out, are determined based on the existing utilization of rental car counters and peak hour rental car passenger demand. PSP currently has a total of 9 rental car providers. Assuming three positions per provider and 3 feet of counter length per position, a total of approximately 90 feet of counter space is required today. Assuming no new rental car service providers are added or removed, the 90 feet of counter space remains constant throughout the planning horizon.

Utilizing similar planning factors used to determine passenger ticketing and check-in requirements for counter area, queue area, and office area of respectively, 7 linear feet, 20 linear feet, and 15 linear feet per rental car passenger, rental car customer service area requirements are determined. The total share of rental car passengers is derived from peak hour ADPM passenger activity levels assuming, based on passenger analysis for PSP, approximately 73% visitors, 1.85 passengers per party, and 58% rental car share factors. The customer service area requirements are summarized in Table 4-35. The existing customer service area is adequate through 2028 with the exception of the passenger queue area, which requires 1,800 square feet of space today. Currently, the majority of the area used for queuing is shared with area allocated for general terminal circulation traffic and encroaches upon passengers waiting to pick up luggage on the baggage carousels. The total rental car customer service area requirement for the planning horizon is 3,780 square feet, requiring expansion by approximately 943 square feet.

Rental Car Ready / Return Lot Requirements

Rental car ready / return lot stall and area requirements are based on 2008 rental car ready / return lot transaction data and peak hour average day peak month enplaned and deplaned passenger data, assuming based on passenger data analysis that approximately 18% of all passengers utilize the airport during the peak hour and the percentage share of passengers that are enplaned and deplaned are respectively 52% and 48%. The passenger activity data is summarized in Table 4-35.

Table 4-35: Rental Car Requirements

	Existing	2008	2013	2018	2023	2028
Passenger Activity Levels						
Annual Passengers (enplaned and deplaned) (MAP)		1.55	1.83	2.19	2.50	2.85
Peak Month Passengers*		231,356	273,356	326,538	373,758	426,205
Average Day Peak Month (ADPM) Passengers		7,463	8,811	10,533	12,057	13,749
Peak Hour ADPM Passengers		1,350	1,600	1,930	2,190	2,520
Peak Hour ADPM Enplaned Passengers		700	830	1,000	1,140	1,310
Peak Hour ADPM Deplaned Passengers		650	770	930	1,050	1,210
Peak Hour ADPM Rental Car Passengers		307	364	439	498	573
Peak Hour ADPM Enplaned Passengers		159	189	227	259	298
Peak Hour ADPM Deplaned Passengers		148	175	211	239	275
Rental Car Transactions						
Peak Month Transactions		839	991	1,184	1,355	1,546
Rental Car Facility Requirements						
Customer Service Area						
Counter Length (linear feet)	148**	90	90	90	90	90
Counter Area (square feet)	1,041**	630	630	630	630	630
Office Area (square feet)	1,645**	1,350	1,350	1,350	1,350	1,350
Passenger Queue Area (square feet)	151**	1,800	1,800	1,800	1,800	1,800
Total Customer Service Area (square feet)	**2,837****	**3,780**	**3,780**	**3,780**	**3,780**	**3,780**
Ready / Return Area						
Ready Stalls	279	273	324	391	442	509
Ready Stalls (square feet)***	92,542	77,700	92,050	110,950	125,300	144,550
Ready Stalls (acres)	2.12	1.78	2.11	2.55	2.88	3.32
Return Stalls	164	191	226	273	311	357
Return Stalls (square feet)***	55,854	42,020	49,720	60,060	68,420	78,540
Return Stalls (acres)	1.28	0.96	1.14	1.38	1.57	1.80
Enterprise Ready / Return Stalls	~46					
Ready / Return Stalls (square feet)***	~16,077	Combined with on-Airport ready/ return stall requirements				
Return / Return Stalls (acres)	~0.64					
Ready / Return Stalls (stalls)	**489**	**464**	**550**	**664**	**753**	**866**
Ready / Return Lot (acres)	**3.78**	**3.16**	**3.74**	**4.52**	**5.12**	**5.89**
Vehicle Service / Maintenance / Storage (acres)	**7.84**	**7.84**	**9.26**	**11.07**	**12.67**	**14.44**
Total Acreage (acres) (w/o cust. svc. area)	**11.61**	**11.00**	**13.00**	**15.59**	**17.79**	**20.34**

Source: HNTB Analysis

Notes: * The peak month passengers number is the peak month enplaned passenger number multiplied by 2. *** The total square footage for the customer service area excludes the square footage for the Enterprise customer service area. ** Ready stalls square footage assumes 350 square feet per stall. Return stalls square footage assumes 220 square feet per stall.

Rental car ready / return lot stall requirements are determined by applying the deplaned (ready) and enplaned (return) passengers to a factor, respectively, of 1.85 and 1.20 spaces per rental car party. Acreage requirements are determined by applying industry standards of 350 square feet per stall for ready spaces and 220 square feet per stall for return spaces. Stall and acreage requirements for the rental car ready / return parking lot are summarized in **Table 4-35.** The rental car ready / return parking lot requirements indicate a total of 866 stalls and 5.89 acres for the ready / return parking lot in 2028.

The existing area used for all rental car service or quick turn-around (wash bays, fueling stations), maintenance and storage facilities is 7.84 acres. Based on the peak hour (ADPM) transactions, the utilization rate for maintenance and storage areas is 0.06 acres per transaction. Assuming a constant utilization, the requirements for service and maintenance will grow to 14.44 acres by 2028. This represents an approximate doubling of the existing size of the service, maintenance and storage facilities. The acreage breakdown for the QTA, and maintenance / storage areas is 5.86 acres for the QTA and 8.58 acres for maintenance / storage areas.

If non-rental car facilities surrounding the existing rental car maintenance and storage facilities are available for development, the maintenance and storage area could be expanded to meet the forecast demand based requirements. However, considering the 10-minute average time to bring a service rental car from the return lot to the maintenance area and 7 minutes from the maintenance / service area to the ready lot, a consolidated rental car facility is recommended to accommodate approximately 19 acres of required rental car functions by 2028. A consolidated facility could reduce the number of employees required by rental car providers, especially during the peak season.

4.6 GENERAL AVIATION FACILITY REQUIREMENTS

General Aviation (GA) facility requirements account for based aircraft and forecast increases in GA and corporate jet activity. GA requirements include aircraft hangar facilities including GA and corporate hangar facilities, apron facilities, tie down facilities, corporate terminal facilities including United States Customs and Border Protection (CBP), GA landside access and parking, and aircraft maintenance.

Review of General Aviation Forecast Activity

The forecast of aviation activity through 2028 is presented in Chapter 3. General Aviation is expected to grow on average 2.2% per year through 2028. **Table 4-36** below presents a summary of the general aviation forecast.

Table 4-36: General Forecast Summary

Forecast	2008	2013	2018	2023	2028
Based Aircraft	116	126	131	136	143
Air Taxi Operations	5,590	5,865	6,289	7,341	8,642
General Aviation Operations	39,181	41,161	44,184	51,640	60,863
Total GA Operations	44,771	47,026	50,473	58,981	69,505

Source: Chapter 3: Inventory of Existing Conditions

Review of General Aviation Facilities

GA activity at the airport is handled by two full service fixed base operators (FBOs), Signature Flight Support and Atlantic Aviation. Signature Flight Support is located west of the runways and north of the passenger terminal. Atlantic Aviation is located east of the runways and south of the SkyWest maintenance facility. Table 4-37 and Table 4-38 present the land and facilities summary for Signature Flight Support and Atlantic Aviation, respectively.

Table 4-37: Signature Flight Support FBO Functional Areas

Facility	Area
Ramp	84,000 square yards
Signature Terminal	6,700 square feet
Conventional Hangar	30,000 square feet
Conventional Hangar	30,000 square feet
Desert Springs Hangar	31,500 square feet
T-Hangar	11,000 square feet
T-Hangar	11,000 square feet
Conventional Hangar	10,500 square feet
Conventional Hangar	10,500 square feet
Desert Aero Maintenance Hangar	10,500 square feet
Landside	108,000 square feet
Fuel	10, 00 square feet
Total Area	**23.5 Acres**

Source: HNTB Analysis

Table 4-38: Atlantic Aviation FBO Functional Areas

Facility	Area
Ramp	89,400 square yards
Atlantic Terminal	7,800 square feet
Conventional Hangar	30,000 square feet
Conventional Hangar	30,000 square feet
Conventional Hangar	15,000 square feet
T-Hangar	9,900 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
Restaurant	3,500 square feet
Landside	30,400 square yards
Fuel	274,000 square feet
Total Area	**33.8 Acres**

Source: HNTB Analysis

While the leased land areas for the two FBO's are nearly equivalent in size, Signature Flight Support is more spread out throughout the west side of the Airport. The Atlantic Aviation facility is more consolidated. Figures 2-18 and 2-19 depict the land area of the FBOs. A total of 116 based aircraft reside at PSP. The majority of the based aircraft, approximately 78%, are single engine piston aircraft. Approximately 11% and 10% are twin engine piston and jet aircraft, respectively. Based single engine and twin engine piston aircraft are typically stored in t-hangars, while conventional hangars are commonly used for based jet aircraft and transient itinerant aircraft. Aircraft tie-down space is primarily used for light transient aircraft. During the peak season, available apron space and hangar space become scarce.

Comparative Airports

It is useful to study the GA facilities at comparable airports to create facilities and operations benchmarks for PSP. Four peer airports have been identified as comparable to PSP: Myrtle Beach International Airport (Myrtle Beach, SC), Sarasota/Brandenton International Airport (Sarasota, FL), Pensacola Regional Airport (Pensacola, FL), and Savannah International Airport (Savannah, GA). The most common denominators among the peer airports identified are their operations levels, size, enplanements, based aircraft, GA facilities, and market sector (leisure). Using existing aerial photography, estimates were created of the hangar space (both conventional and t-hangar) and apron space at the general aviation facilities at these four benchmark airports. **Table 4-39** presents the based aircraft, local GA operations (those flown by based aircraft), itinerant GA operations (those flown by transient aircraft), t-hangar area, conventional hangar area and apron area for the benchmark airports as well as for PSP.

Table 4-39: Benchmark Airport Facilities

Airport	Based Aircraft	Local GA Ops	Itinerant GA Ops	T-Hangar Area (ft^2)	Conv. Hangar Area (ft^2)	Apron Area (yd^2)
Myrtle Beach (MYR)	52	4,420	17,428	--	221,000	137,850
Sarasota (SRQ)	255	31,399	83,715	227,000	182,000	88,750
Pensacola (PNS)	85	28,042	28,003	48,000	74,500	86,900
Savannah (SAV)	121	10,958	41,628	77,000	192,800	126,600
Palm Springs (PSP)	115	13,426	39,852	69,000	198,000	173,400

Source: HNTB Analysis , Google Earth, AirNav.com, and FAA TAF

In addition to serving as a benchmark for operational and facilities characteristics, these peer airports can help predict the need for future general aviation facilities at PSP. Using linear regression in conjunction with the results from the forecast, it is possible to estimate general aviation facility requirements for t-hangar area, conventional hangar area and apron area.

T-Hangar Facility Requirements

T-hangars are primarily used by small piston aircraft that are based at the airport. In an effort to capture an estimation of future t-hangar area, based aircraft was taken to be the independent variable in the regression equation with t-hangar area as the dependent variable. Myrtle Beach has negligible t-hangar facilities and was consequently removed from the regression analysis for t-hangar area. The range of based aircraft and t-hangar area allows for an effective regression analysis. With a highly significant statistical result, the predicted equation for t-hangar space is as follows: $A_{T-hangar} = 1085\beta_{Based} - 51170$

Using the forecast based aircraft at PSP; the requirement for t-hangar area is summarized in **Table 4-40**. There is an existing deficiency of t-hangar area at PSP. This deficiency grows to approximately 51,200 square feet in 2028.

Table 4-40: T-Hangar Area Requirement

T-Hangar Area	2008	2013	2018	2023	2028
Required Area (Square Feet)	73,600	87,700	97,400	108,300	120,200
Existing Area (Square Feet)	69,000	69,000	69,000	69,000	69,000
Deficient Area (Square Feet)	4,600	18,700	28,400	39,300	51,200

Source: HNTB Analysis

Conventional Hangar Requirements

At Palm Springs International Airport, conventional hangars are frequently used by transient jet aircraft as well as based aircraft. The approach for establishing conventional hangar facility requirements is different than the approach for t-hangars due to the dual dependency on both based and transient aircraft. To generate a planning factor for conventional hangar area at PSP, it is useful to look at the ratio of conventional hangar space to the number of combined general aviation operations at the benchmark airports. The average rate at the peer benchmark airports is approximately 2.57 square feet of conventional hangar space per general aviation operation. Due to Palm Springs hot climate during the summer months, there will be a greater demand for conventional hangar space than the average requirement for the benchmark airports. The existing ratio of conventional hangar area to general aviation operations is 3.71. There is an existing deficiency of corporate hangar space available at the Airport. To better reflect the demand on the facilities and to provide a higher level of service for general aviation users and providers, a planning factor of 5.50 square feet per forecast general aviation operations is applied. Table 4-41 presents the required conventional hangar area in square feet after applying the forecast number of general aviation operations. By 2028, approximately 382,300 square feet of conventional hangar space will be required at the Airport.

Table 4-41: Conventional Hangar Area Requirement

Conventional Hangar Area	2008	2013	2018	2023	2028
Required Area (Square Feet)	246,200	258,600	277,600	324,400	382,300
Existing Area (Square Feet)	198,000	198,000	198,000	198,000	198,000
Deficient Area (Square Feet)	48,200	60,600	79,600	126,400	184,300

Source: HNTB Analysis

Apron Facility Requirements

Apron areas are generally used to park aircraft. Both based and transient aircraft can be expected to park at the GA aprons. Light piston aircraft are typically tied down to the apron while heavier jet aircraft can also be parked on an apron. A comparative analysis of the apron areas at the benchmark airports reveals that the average ratio of apron area to total GA operations is 2.86. The existing ratio at PSP is 3.87 square yards per general aviation operation. During the peak season, the apron areas at the two fixed base operators become congested with parked aircraft. To provide a higher level of service during the peak season, a planning factor of 4.25 square yards of apron per general aviation operation. Table 4-42 presents an order of magnitude requirement for general aviation apron area (measured in square yards) for PSP. Considerable apron development is required to sustain a high level of service.

Table 4-42: Apron Area Requirement

Apron Area	2008	2013	2018	2023	2028
Required Area (Square Yards)	190,300	199,900	214,500	250,700	295,400
Existing Area (Square Yards)	173,400	173,400	173,400	173,400	173,400
Deficient Area (Square Yards)	16,900	26,500	41,100	77,300	122,200

Source: HNTB Analysis

Aircraft tie-down area is anticipated to stay proportional to total apron area throughout the planning horizon.

FBO Terminal Facility Requirements

FBO terminal facilities provide rest and relaxation areas for pilots and passengers and offices for tenants. In early 2008, Signature Flight Support constructed a new FBO terminal. The Signature Terminal will be adequate for the duration of the planning period. Atlantic Aviation's FBO terminal is in good condition as well, and should be adequate for the planning period. If a new FBO enters the PSP market, approximately 10,000 square feet of land would be needed for the building footprint to provide a comparable facility.

Customs and Border Protection

United States Customs and Border Protection (CBP) service is available 24 hours a day at Palm Springs International Airport with a minimum advanced notice of four hours. The facility is located in the same building that Signature Flight Support FBO used to occupy. The facility has the capability of handling aircraft with a maximum of 15 passengers and crew. Arriving international aircraft taxi to the ramp in front of the CBP facility and an officer will instruct the passengers to deplane and enter the facility for immigration processing. The existing facility should provide adequate capacity for international general aviation activity throughout the planning horizon.

Landside and Parking Requirements

Landside facilities are critical to an FBO's success. Providing a high level of service for parking and valet service is a key consideration in attracting business. Currently, landside area accounts for approximately 14% of the total area available designated general aviation. For planning purposes, a factor of 10% will be applied to the total required land area requirement for general aviation at PSP. The existing landside provides a high level of service, and it is anticipated that a high level of service will continue in the future. Table 4-43 below presents the landside requirements for general aviation. Landside area is more than adequate throughout the planning horizon.

Table 4-43: Landside Requirement

Landside Area	2008	2013	2018	2023	2028
Required Area (Square Feet)	203,400	214,500	230,600	268,900	316,100
Existing Area (Square Feet)	381,600	381,600	381,600	381,600	381,600
Deficient Area (Square Feet)	0	0	0	0	0

Source: HNTB Analysis

Summary

Hangar footprint, apron area, terminal, and landside comprise the general aviation land area. **Table 4-44** below presents the total requirements for general aviation land area throughout the planning period.

Table 4-44: General Aviation Land Area Requirements Summary

Area	2008	2013	2018	2023	2028
T-Hangar Area (ft^2)	73,600	87,700	97,400	108,300	120,200
Conventional Hangar Area (ft^2)	246,200	258,600	277,600	324,400	382,300
Apron Area (yd^2)	190,300	199,900	214,500	250,700	295,400
Landside Area (sf^2)	203,400	214,500	230,600	268,900	316,100
Total Land Area (acre)	51	54	58	68	80
Total Existing Area (acre)	57	57	57	57	57
Deficiency (acre)	0	0	1	11	23

Source: HNTB Analysis

Despite showing no deficit in total land area allocated to general aviation development until 2018, it should be noted that there are deficits in t-hangar space, conventional hangar space, and apron space. This is mostly attributable to, given the shape of the general aviation land available, the inefficiency in how general aviation land is used on the west side of the Airport. From a facilities and level of service perspective there will be an ultimate land deficiency of 23 acres in 2028.

In the near term, additional conventional hangars and apron areas are recommended to be developed. Already under the leasehold of Atlantic Aviation, half of the 7.4-acre parcel located between Atlantic and SkyWest is available for potential development. It is anticipated that this parcel will be developed as demand returns following the current economic recession. Another parcel suitable for general aviation development is the 11.2-acre seasonal rental car overflow storage area north of Signature's leasehold. An extension of Taxiway J could stimulate development of this parcel. A third viable general aviation parcel on the Airport is the 13.7-acre property immediately south of the Palm Springs Air Museum. For planning purposes, all three of the identified parcels should be preserved for general aviation growth and development.

4.7 SUPPORT FACILITY REQUIREMENTS

Support facilities include but are not limited to:

- Fueling facilities,
- Aircraft rescue and fire fighting,
- Airline maintenance,
- Airport maintenance and operations, and
- Utilities.

4.7-1 Fueling Facilities

Atlantic Aviation Fixed Base Operator (FBO) and Signature Flight Support FBO are responsible for all aircraft fueling at PSP. Both FBOs provide Jet A and 100 LL AVGAS to their customers. Chapter 2 describes the fueling facilities at both FBOs. Currently, Signature Flight Support is the sole provider of fuel for commercial aircraft. Atlantic Aviation previously serviced Air Canada when the airline served PSP, but is no longer under contract with any airline.

Future fueling requirements are developed for fuel storage (gallons) and land area (acres). **Table 4-45** below summarizes the fuel storage capacity of the two fixed base operators for Jet A and AVAGAS fuel. Total on-Airport Jet A storage is 208,000 gallons. Total on-Airport AVGAS storage is 26,750 gallons.

Table 4-45: Fuel Services Inventory

Storage Unit	Capacity (Gallons)	
Jet A Fuel Inventory		
Signature Flight *Support*		
Aboveground Storage TanksAST	20,000	
Aboveground Storage TanksAST	20,000	
Aboveground Storage TanksAST	20,000	
Aboveground Storage TanksAST	20,000	
Aboveground Storage TanksAST	20,000	
Mobile Tanker	10,000	
Mobile Tanker	5,000	
Mobile Tanker	5,000	
Mobile Tanker	5,000	
Mobile Tanker	3,000	
Mobile Tanker	7,000	
Signature Jet A Storage Subtotal	**135,000**	
Atlantic Aviation		
Aboveground Storage Tanks	20,000	
Aboveground Storage Tanks	20,000	
Aboveground Storage Tanks	20,000	
Mobile Tanker	5,000	
Mobile Tanker	5,000	
Mobile Tanker	3,000	
Atlantic Jet A Storage Subtotal	**73,000**	
Total Jet A Storage		**208,000**
100 Low Lead AVGAS Fuel (100 LL) Inventory		
Signature Flight Support		
Aboveground Storage TanksAST	12,000	
Mobile Tanker	1,000	
Mobile Tanker	750	
Signature AVGAS Subtotal	**13,750**	
Atlantic Aviation		
Aboveground Storage Tanks	12,000	
Mobile Tanker	1,000	
Atlantic AVGAS Subtotal	13,000	
Total AVGAS Storage	**26,750**	

Source: Signature Flight Support and Atlantic Aviation

Fuel storage requirements are broken down into three categories: Jet A for commercial aircraft, Jet A for general aviation aircraft, and AVGAS for general aviation aircraft. The methodology for determining storage and area requirements for all three categories are similar. The FBOs store detailed monthly fuel consumption data by category (e.g. commercial Jet A, corporate aircraft Jet A, etc…). **Table 4-46** below presents the monthly consumption of fuel for commercial aircraft in 2007, the average daily consumption (the consumption in a given month divided by the number of days), the number of monthly operations, the number of average daily operations per month, and the average number of gallons dispensed per departure.

Table 4-46: Fuel Dispensing Breakdown – Commercial Aircraft (Jet A)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Fuel Dispensed (Gal)	1,618,289	1,579,699	1,889,115	1,301,639	870,504	571,947	555,869	528,859	648,564	906,211	1,244,021	1,330,864	13,045,581
Avg. Daily Consum. (Gal)	52,203	56,418	60,939	43,388	28,081	19,065	17,931	17,060	21,619	29,233	41,467	42,931	35,741
GA Operations	3,104	3,059	3,622	3,028	2,338	1,654	1,627	1,538	1,618	2,044	2,742	2,707	29,082
Avg. Daily Operations	100	109	117	101	75	55	52	50	54	66	91	87	80
Gal / Departure	1,043	1,033	1,043	860	745	692	683	688	802	887	907	983	897

Source: HNTB Analysis, Atlantic Aviation, Signature Flight Support

The same process is carried forward in **Table 4-47** and **Table 4-48** for general aviation aircraft that require Jet A and for general aviation aircraft that require AVGAS, respectively.

Table 4-47: Fuel Dispensing Breakdown – General Aviation Aircraft (Jet A)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Fuel Dispensed (Gal)	595,281	473,121	519,609	443,372	303,726	145,451	53,141	145,244	76,550	222,258	334,389	360,414	3,672,576
Avg. Daily Consum. (Gal)	19,203	16,897	16,762	14,779	9,798	4,848	1,715	4,685	2,552	7,170	11,146	11,626	10,062
GA Operations	4,525	4,452	5,508	4,543	3,928	2,934	2,104	2,019	2,126	2,798	3,626	2,981	41,547
Avg. Daily Operations	146	159	178	151	127	98	68	65	71	90	121	96	114
Gal / Departure	263	213	189	195	155	99	51	144	72	159	184	242	177

Source: HNTB Analysis, Atlantic Aviation, Signature Flight Support

Table 4-48: Fuel Dispensing Breakdown – General Aviation Aircraft (AVGAS)

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Fuel Dispensed (Gal)	8,019	9,908	8,475	7,840	16,207	7,842
Avg. Daily Consum. (Gal)	259	354	273	261	523	261
GA Operations	4,525	4,452	5,508	4,543	3,928	2,934
Avg. Daily Operations	146	159	178	151	127	98
Gal / Departure	4	4	3	3	8	5

	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Fuel Dispensed (Gal)	7,932	7,840	7,954	7,841	16,223	11,987	118,068
Avg. Daily Consum. (Gal)	256	253	265	253	541	387	323
GA Operations	2,104	2,019	2,126	2,798	3,626	2,981	41,547
Avg. Daily Operations	68	65	71	90	121	96	114
Gal / Departure	8	8	7	6	9	8	6

Source: HNTB Analysis, Atlantic Aviation, Signature Flight Support

Several assumptions need to be stated prior to analyzing future fuel storage requirements. The analysis assumes that the peak month, March, will hold constant and that 13% of all GA operations will occur during the peak month. Another key assumption is that the fleet mix maintains the proportion of piston aircraft to jet aircraft. This assumption is key to determining whether general aviation at PSP requires Jet A fuel or AVGAS. Additionally, a 10% fuel reserve is added to the storage requirements. The required area for the tanks is determined by examining the existing facility utilization (square feet per gallon of storage). A utilization rate of 0.14 square feet per gallon of fuel is assumed constant throughout the planning period. The average gallons dispensed per departure is used to project future requirements and is assumed to remain constant. Requirements are determined for 4 storage intervals in each planning horizon (1 day, 3 day, 5 day, and 7 day requirements). The Jet A fuel requirements are presented in **Table 4-49** below.

Table 4-49: Jet A Fuel Requirements Summary

	2008	2013	2018	2023	2028
Commercial ADPM Departures	56	59	67	72	77
GA ADPM Departures	94	99	106	124	146
ADPM Commercial Fuel Dispensed Per Departure (gal)	1,043	1,043	1,043	1,043	1,043
ADPM GA Fuel Dispensed Per Departure (gal)	189	189	189	189	189
Jet A 1-Day Fuel Demand (gal)	76,150	80,173	89,883	98,470	107,855
Jet A 3-Day Fuel Demand (gal)	142,834	267,243	299,610	328,232	359,517
Jet A 5-Day Fuel Demand (gal)	423,057	445,405	499,350	547,053	599,195
Jet A 7-Day Fuel Demand (gal)	592,280	623,567	699,090	765,875	838,873
Jet A Existing Capacity (gal)	*208,000*	*208,000*	*208,000*	*208,000*	*208,000*
Jet A 1-Day Area Req. (ft^2)	11,119	11,706	13,124	14,378	15,748
Jet A 3-Day Area Req. (ft^2)	37,062	39,020	43,746	47,925	52,493
Jet A 5-Day Area Req. (ft^2)	61,771	65,034	72,910	79,875	87,489
Jet A 7-Day Area Req. (ft^2)	86,479	91,047	102,074	111,825	122,484
Existing Fuel Storage Area (ft^2)	160,000	160,000	160,000	160,000	160,000

Source: HNTB Analysis

The range of storage requirements are depicted for the average day of the peak month. The fuel requirements will be considerably less in the off-season. Since fuel is trucked to the airport by providers, it is not always feasible to maintain a 5-day supply during the peak month. It is more realistic to accommodate the 3-day fuel requirement. Sufficient area is available to add fuel tanks. A nearly identical methodology is performed for AVGAS requirements. The main difference is that May is the peak month for AVGAS distribution. The AVGAS requirements are presented in **Table 4-50** below. Sufficient capacity exists for AVGAS storage at the Airport for the foreseeable future.

Table 4-50: AVGAS Fuel Requirements Summary

	2008	**2013**	**2018**	**2023**	**2028**
GA ADPM Departures	94	99	106	124	146
ADPM GA Fuel Dispensed Per Departure (gal)	8	8	8	8	8
AVGAS 1 Day Fuel Demand (gal)	751	789	847	989	1,166
AVGAS 3 Day Fuel Demand (gal)	2,503	2,629	2,822	3,298	3,886
AVGAS 5 Day Fuel Demand (gal)	4,172	4,382	4,704	5,496	6,477
AVGAS 7 Day Fuel Demand (gal)	5,841	6,135	6,585	7,695	9,068
AVGAS Existing Capacity (gal)	*26,750*	*26,750*	*26,750*	*26,750*	*26,750*
AVGAS 1 Day Area Req. (ft^2)	110	115	124	144	170
AVGAS 3 Day Area Req. (ft^2)	366	384	412	482	567
AVGAS 5 Day Area Req. (ft^2)	609	640	687	803	946
AVGAS 7 Day Area Req. (ft^2)	853	896	961	1,124	1,324
Existing Fuel Storage Area (ft^2)	160,000	160,000	160,000	160,000	160,000

Source: HNTB Analysis

4.7-2 Aircraft Rescue and Fire Fighting

Aircraft rescue and fire fighting (ARFF) requirements and recommendations are provided in 14 CFR Part 139. Airports certified under Part 139 must comply with specific ARFF requirements including response time requirements and extinguishing agent requirements.

Part 139 is used to determine the aircraft rescue and firefighting index (A through E) for airports serving certificated air carrier service based on the length of the longest aircraft operated by an air carrier performing an average of five scheduled departures per day (computed on an annual basis). Determination of the appropriate amount of ARFF equipment for an airport is based on the airport Index. The five ARFF indices and associated requirements are presented in **Table 4-51**. PSP is an ARFF Index C Airport.

Table 4-51: ARFF Index Classifications

Airport Index	Required No. of Vehicles	Aircraft Length (feet)	Schedule Daily Departures	Agent Plus Water for Foam
A	1	< 90	> 1	500# Sodium-based DC or Halon 1211 or Clean Agent; or 450# Potassium-based DC plus water to produce 100 gal of AFFF.
		≥ 90, < 126	< 5	
B	1 or 2	≥ 90, < 126	≥ 5	Index A plus 1,500 gal Water
		≥ 126, < 159	< 5	
C	2 or 3	≥ 126, < 159	≥ 5	Index A plus 3,000 gal Water
		≥ 159, < 200	< 5	
D	3	≥ 159, < 200	≥ 5	Index A plus 4,000 gal Water
		≥ 200	< 5	
E	3	≥ 200	≥ 5	Index A Plus 6,000 gal Water

Source: 14 CFR Part 139
Notes: DC = Dry Chemical; AFFF = Aqueous Film Forming Foam

The existing ARFF facility is located at 300 N. El Cielo Road, north of the passenger terminal complex and west of the air traffic control tower. The ARFF facility is a dual use station that is capable of responding to city fires with conventional firefighting equipment and aircraft incidents on the airfield with ARFF equipment. One potential impediment to efficient ARFF egress is the relocation of general aviation tie down positions to the apron area directly in front of the ARFF station. Another potential impediment to efficient ARFF operations is the gravel bed located north of the existing Air Traffic Control Tower. ARFF rapid response events require ARFF vehicles to drive over gravel to reach Taxiway W.

The existing facility is a dual role station operating as a City of Palm Springs municipal fire station as well as operating as an ARFF facility. The facility stores both municipal fire response vehicles and equipment and ARFF vehicles and equipment. The facility has rapid response access to both the El Cielo Drive as well as the airfield. The ARFF facility does not currently meet its needs for storage. As a temporary solution, two storage containers have been placed adjacent to the facility. These containers are at capacity with firefighting equipment. A permanent solution for expanded storage should be developed.

During interviews with PSP ARFF personnel, a desire for additional land to conduct ARFF training exercises at PSP was expressed. A provision for these facilities will be considered in the development of the land-use plan.

4.7-3 Airline Maintenance

The Airport has approximately 5.6 acres of land allocated to airline maintenance (all to SkyWest Airlines) with approximately 50,000 square feet of office and hangar space, 11,630 square yards of ramp, and 90,250 square feet for landside functions. The facility provides C-checks for SkyWest's Embraer 120 Brasilia aircraft and overnight checks for SkyWest's CRJ fleet. SkyWest operates the Embraer 120, CRJ 200, CRJ 700, CRJ 700ER, and CRJ 900 LR on behalf of United Express and Delta Connection.

Airline maintenance hangars and facilities are typically built by airlines based on corporate business decisions that are not necessarily related to the volume of air traffic at a given airport. It is, therefore, difficult to forecast the requirement for such facilities. The factors that typically influence construction of such facilities include airline headquarters location, hubbing characteristics, fleet size, maintenance scheduling, climate, and location of terminating flights. As the smaller turboprop Embraer 120s are retired from service, larger Bombardier regional jet aircraft will take over their air routes. For planning purposes, it is recommended that approximately 5 acres of additional land be preserved for potential maintenance expansion as this business is beneficial to the airport and region.

4.7-4 Airport Maintenance and Operations

Airport maintenance and operations facilities are located in and around the main passenger terminal. Maintenance and operations store their vehicles on the secure east side of the ticketing lobby. Airport maintenance offices are located on the ground floor of the Bono Concourse. Operations personnel are based on the ground level of the passenger concourse south of the passenger security screening checkpoint. The operations facility is approximately 4,000 square feet and provides direct access to both concourses and the maintenance and operations airport vehicle staging area. The weather in Palm Springs does not dictate the need for covered/indoor parking for airport maintenance and operations vehicles. The existing facilities for airport maintenance and operations should be adequate through 2028.

4.7-5 Utilities

The passenger terminal complex is powered by the City of Palm Springs' cogeneration plant. The City's cogeneration plant is approaching or already reached its maximum capacity. Any proposed terminal expansion will likely require additional sources of energy. With the selection of a preferred terminal alternative, a programmatic report should be prepared to discuss facility specifics including energy, sewer, water, heating, and cooling requirements. The locations identified for future expansion of general aviation will require minimal infrastructure improvements, to accommodate development.

4.7-6 Support Summary

In summary, the following recommendations are made for PSP's support facilities:

- Fuel Storage
    1. Increase the available Jet-A fuel storage to meet the 3-day 2028 storage requirement of 359,517 gallons (Short term to long term implementation)
- ARFF
    1. Designate additional area on the future land use plan devoted to ARFF equipment storage and ARFF training
- Airline Maintenance
    1. Protect the land adjacent to the SkyWest maintenance facility for potential future development
- Airport Maintenance
    1. Provide additional vacant area on the future land use plan devoted to Airport Maintenance

4.8 SUMMARY

Facility requirements for Palm Springs International Airport are methodically determined for 2008, 2013, 2018, 2023 and 2028 based on existing conditions, the aviation activity forecast for operations and passengers, various planning factors adjusted for the Airport, and which meet a LOS C. The requirements for each functional component (airside, terminal, landside, and support) are summarized quantitatively in **Table 4-52** and graphically in **Figure 4-8**.

Table 4-52: Facility Requirements Summary

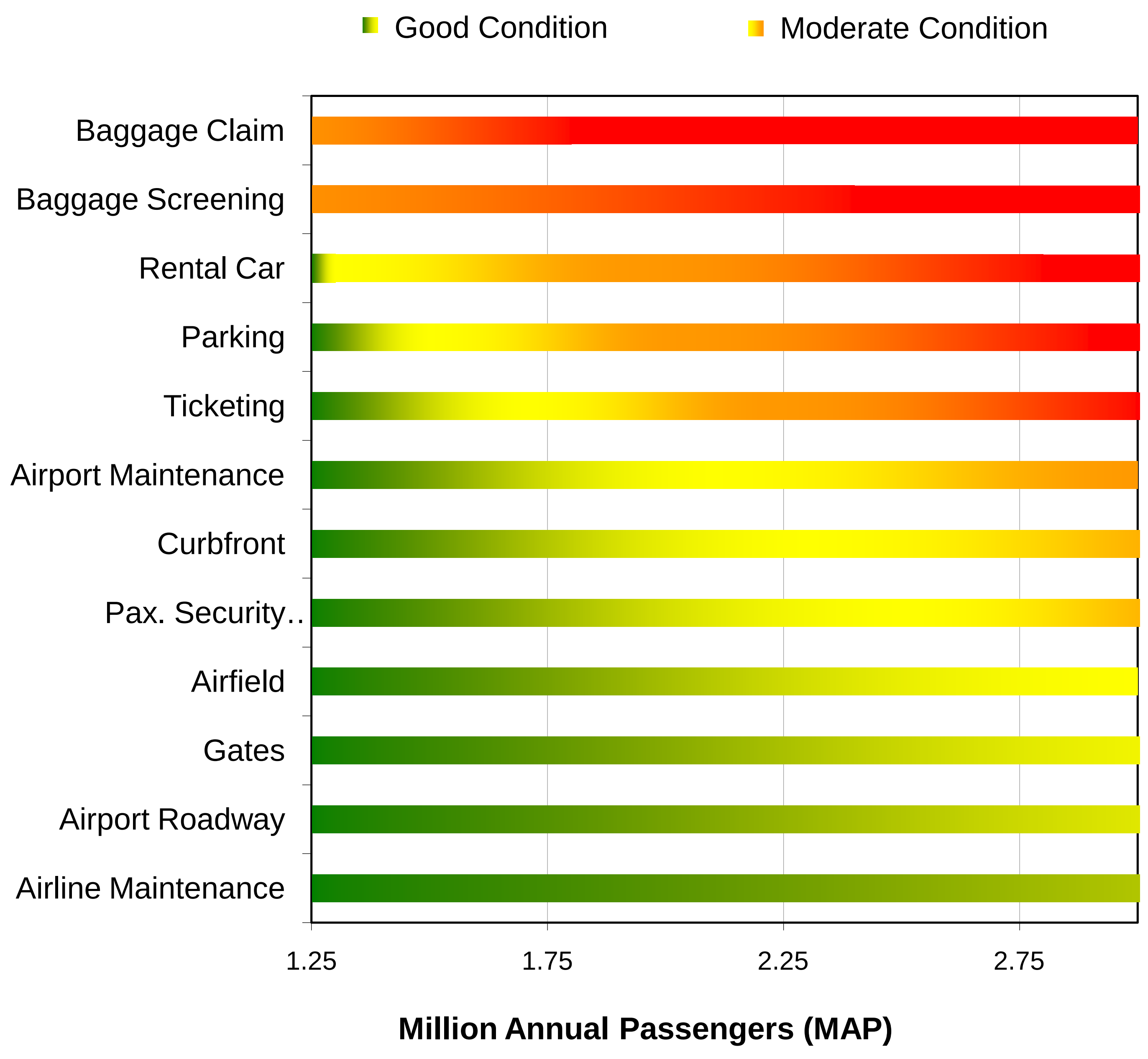
Functional Element	**Existing**	**2008 Requirement**	**2013 Requirement**	**2018 Requirement**	**2023 Requirement**	**2028 Requirement**	**2008 Deficiency**	**2013 Deficiency**	**2018 Deficiency**	**2023 Deficiency**	**2028 Deficiency**
Employee Parking											
Employee Parking Lot (stalls)	210	327	386	462	528	601	117	176	252	318	391
Employee Parking Lot Area (acres)	1.69	2.63	3.10	3.71	4.24	4.83	0.94	1.41	2.02	2.56	3.14
Rental Car (includes Enterprise)											
Customer Service Area (inside terminal)											
Customer Service Counter Length (linear feet)	148	90	90	90	90	90	0	0	0	0	0
Customer Service Counter Area (square feet)	1,041	630	630	630	630	630	0	0	0	0	0
Customer Service Office Area (square feet)	1,645	1,350	1,350	1,350	1,350	1,350	0	0	0	0	0
Customer Service Passenger Queue Area (square feet)	151	1,800	1,800	1,800	1,800	1,800	1,649	1,649	1,649	1,649	1,649
Ready / Return Parking Lot											
Ready Parking Lot (stalls)	302	273	324	391	442	509	0	22	89	140	207
Return Parking Lot (stalls)	187	191	226	273	311	357	4	39	86	124	170
Ready / Return Lot (acres)	3.78	3.16	3.74	4.52	5.12	5.89	0	0	0.74	1.34	2.11
Vehicle Service / Maintenance / Storage Area (acres)	7.84	7.84	9.26	11.07	12.67	14.44	0	1.42	3.23	4.83	6.60
Total Area (excludes Customer Service Area) (acres)	11.61	11.00	13.00	15.59	17.79	20.34	0	1.39	3.98	6.18	8.73
Support											
General Aviation (excluding terminal)											
GA T-Hangar (square feet)	69,100	73,600	87,700	97,400	108,300	120,200	4,500	18,600	28,300	39,200	51,100
GA Conventional Hangar (square feet)	198,000	246,200	258,600	277,600	324,400	382,300	48,200	60,600	79,600	126,400	184,300
GA Apron Area (square yards)	173,400	190,300	199,900	214,500	250,700	295,400	16,900	26,500	41,100	77,300	122,000
GA Landside Area (square feet)	381,600	203,400	214,500	230,600	268,900	316,100	-178,200	-167,100	-151,000	-112,700	-65,500
General Aviation Area Subtotal (square feet)	2,209,300	2,235,900	2,359,900	2,536,100	2,957,900	3,477,200	26,600	150,600	326,800	748,600	1,267,900
General Aviation Area Subtotal (acres)	51	51	54	58	68	80	1	3	8	17	29
Other Support											
Fuel Storage Jet-A (gallons) (3-day Requirement)	208,000	142,834	267,243	299,610	328,232	359,517	0	59,243	91,610	120,232	151,517
Fuel Storage AVGAS (gallons) (3-day Requirement)	26,750	2,503	2,629	2,822	3,298	3,886	0	0	0	0	0
ARFF Index	C	C	C	C	C	C	-	-	-	-	-
Airport Maintenance (acres)	5.6	5.6	6.6	7.6	8.6	10.6	0	1	2	3	5

Table 4-52: Facility Requirements Summary

Functional Element	Existing	2008 Requirement	2013 Requirement	2018 Requirement	2023 Requirement	2028 Requirement	2008 Deficiency	2013 Deficiency	2018 Deficiency	2023 Deficiency	2028 Deficiency
Baggage Claim											
Baggage Claim Area (square feet)	13,247	23,370	27,663	31,617	36,189	41,267	10,123	14,416	18,370	22,942	28,020
Baggage Service Offices (square feet)	516	1,535	1,817	2,076	2,376	2,710	1,019	1,301	1,560	1,860	2,194
Baggage Claim Frontage (linear feet)	675	779	922	1,054	1,206	1,376	104	247	379	531	701
Baggage Claim Devices (devices)	3	3	4	5	5	6	0	1	2	2	3
Baggage Claim Circulation (square feet)	9,834	9,815	11,619	13,279	15,199	17,332	0	1,785	3,445	5,365	7,498
Baggage Claim Area Subtotal (square feet)	13,247	23,370	27,663	31,617	36,189	41,267	10,123	14,416	18,370	22,942	28,020
Public Area											
USO (square feet)	1,252	1,252	1,252	1,252	1,252	1,252	0	0	0	0	0
General Circulation (square feet)	24,325	11,611	14,338	16,388	18,757	21,390	0	0	0	0	0
Restrooms	2,021	2,444	2,893	3,306	3,785	4,316	423	872	1,285	1,764	2,295
Concessions (square feet)	6,764	6,764	6,764	6,764	6,764	6,764	0	0	0	0	0
Public Area Subtotal (square feet)	34,362	22,071	25,247	27,710	30,558	33,722	0	0	0	0	0
Non Public Area											
TSA Offices (square feet)	2,202	1,554	1,839	2,102	2,406	2,744	0	0	0	204	542
Airport Administration (square feet)	5,750	5,750	5,750	5,750	5,750	5,750	0	0	0	0	0
Airport Operations	4,858	4,858	4,858	4,858	4,858	4,858	0	0	0	0	0
Non Public Area Subtotal (square feet)	12,810	12,162	12,447	12,710	13,014	13,352	0	0	0	204	542
Other											
Mech / Elec / Maint / Storage (square feet)	7,529	15,271	17,738	19,953	22,515	25,361	7,742	10,209	12,424	14,986	17,832
*Total Processor Area (square feet)**	116,399	124,923	144,811	162,712	183,211	205,831	8,524	28,412	46,313	66,812	89,432
**Other Components of the Processor are not included in this summary, but requirements were determined are included in the total area*											
Landside											
Terminal Curbside											
Lanes											
Private Vehicle Inner Curb (effective # of 12' lanes)	4	4	4	5	5	5	0	0	1	1	1
Commercial Vehicle Outer Curb (effective # of 12' lanes)	4	4	4	4	4	4	0	0	0	0	0
LOS C Requirement											
Private Vehicle Inner Curb (linear feet) (LOS C Requirement)	1,056	754	831	908	1,031	1,146	0	0	0	0	90
Commercial Vehicle Outer Curb (linear feet) (LOS C Requirement)	1,512	330	390	410	430	450	0	0	0	0	0
Public Parking											
Stalls											
Daily Short Term Parking (stalls)	377	275	325	388	444	507	0	0	11	67	130
Daily Long Term Parking (stalls)	538	480	567	677	775	884	0	29	139	237	346
	915	755	892	1065	1219	1391	0	0	150	304	476
Holiday Economy Parking (stalls)	1,000	1,000	1,000	1,000	1,000	1,000	0	0	0	0	0
Acres											
Daily Short Term Parking (acres)	3.86	2.53	2.98	3.56	4.08	4.65	0	0	0	0.22	0.79
Daily Long Term Parking (acres)	4.78	4.41	5.21	6.23	7.13	8.13	0	0.43	1	2.35	3.35
Holiday Economy Parking (paved area) (acres)	4.47	4.47	4.47	4.47	4.47	4.47	0	0	0	0	0

Table 4-52: Facility Requirements Summary

Functional Element	Existing	2008 Requirement	2013 Requirement	2018 Requirement	2023 Requirement	2028 Requirement	2008 Deficiency	2013 Deficiency	2018 Deficiency	2023 Deficiency	2028 Deficiency
Forecast Activity Levels											
Annual Enplaned Passengers	774,056	774,056	955,889	1,092,510	1,250,495	1,425,969	0	181,833	318,454	476,439	651,913
Peak Hour Originating Passengers (PHOP)	840	840	994	1,136	1,301	1,483	0	154	296	461	643
Peak Hour Terminating Passengers (PHTP)	779	779	922	1,054	1,206	1,376	0	143	275	427	597
Peak Hour Passengers	1,222	1,222	1,446	1,653	1,892	2,158	0	224	431	670	936
Annual Aircraft Operations	84,677	72,876	77,932	85,168	95,920	108,875	-11,801	-6,745	491	11,243	24,198
Domestic Passenger	28,070	25,602	28,072	31,472	33,362	35,380	-2,468	2	3,402	5,292	7,310
International Passenger	946	1,210	1,540	1,930	2,284	2,698	264	594	984	1,338	1,752
Passenger Charter	66	66	66	66	66	66	0	0	0	0	0
True Air Taxi	6,809	5,590	5,865	6,289	7,341	8,642	-1,219	-944	-520	532	1,833
Commercial Operations Subtotal	35,891	32,468	35,543	39,757	43,053	46,786	-3,423	-348	3,866	7,162	10,895
General Aviation	47,476	39,181	41,161	44,184	51,640	60,863	-8,295	-6,315	-3,292	4,164	13,387
Military	1,310	1,227	1,227	1,227	1,227	1,227	-83	-83	-83	-83	-83
General Aviation Based Aircraft	115	115	126	131	136	143	0	11	16	21	28
Airfield											
Number of Runways	2	2	2	2	2	2	0	0	0	0	0
Runway Length 13R-31L (feet)	10,001	10,001	10,001	10,001	10,001	10,001	0	0	0	0	0
13L-31R (feet)	4,952	4,952	4,952	4,952	4,952	4,952	0	0	0	0	0
Runway Width 13R-31L (feet)	150	150	150	150	150	150	0	0	0	0	0
13L-31R (feet)	75	75	75	75	75	75	0	0	0	0	0
Instrument 13R-31L (feet)	Visual	Visual	Visual	Visual	Visual	Visual	-	-	-	-	-
13L-31R (feet)	Visual	Visual	Visual	Visual	Visual	Visual	-	-	-	-	-
Runway Lighting 13R-31L (feet)	HIRL	HIRL	HIRL	HIRL	HIRL	HIRL	-	-	-	-	-
13L-31R (feet)	MIRL	MIRL	MIRL	MIRL	MIRL	MIRL	-	-	-	-	-
Approach Lighting 13R-31L (feet)	NONE	NONE	NONE	NONE	NONE	NONE	-	-	-	-	-
13L-31R (feet)	NONE	NONE	NONE	NONE	NONE	NONE	-	-	-	-	-
High Speed Runway Exits	4	4	4	4	4	4	0	0	0	0	0
Runway Safety Area Mitigation	NEEDED	NEEDED	NEEDED	NEEDED	NEEDED	NEEDED	-	-	-	-	-
Terminal											
Ticketing											
Ticket Counter Area (square feet)	2,369	2,264	2,680	3,063	3,506	3,997	0	311	694	1,137	1,628
Ticket Counter Queuing (square feet)	2,384	4,116	4,872	5,568	6,374	7,268	1,732	2,488	3,184	3,990	4,884
Ticket Counter Length (linear feet)	248	206	244	278	319	363	0	0	30	71	115
Ticket Counter Circulation (square feet)	6,452	6,174	7,308	8,353	9,561	10,902	0	856	1,901	3,109	4,450
Airline Ticket Office (square feet)	12,846	6,174	7,308	8,353	9,561	10,902	0	0	0	0	0
Ticketing Area Subtotal (square feet)	24,051	18,728	22,168	25,337	29,002	33,069	0	0	1,286	4,951	9,018
Baggage Transfer											
Outbound Baggage Make-up (square feet)	7,404	11,874	14,055	16,064	18,387	20,967	4,470	6,651	8,660	10,983	13,563
EDS In-Line Baggage Screening (square feet)	7,303	5,988	7,088	8,101	9,273	10,574	0	0	798	1,970	3,271
Inbound Baggage Make-up (square feet)	2,339	8,959	10,604	12,120	13,872	15,819	6,620	8,265	9,781	11,533	13,480
Baggage Transfer Area Subtotal (square feet)	17,046	26,821	31,747	36,285	41,532	47,360	9,775	14,701	19,239	24,486	30,314
Passenger Screening											
Security Screening Lanes (lanes)	6	5	6	7	8	9	0	0	1	2	3
Passenger Screening Area (square feet)	7,354	6,500	7,800	9,100	10,400	11,700	0	446	1,746	3,046	4,346
Passenger Screening Subtotal (square feet)	7,354	6,500	7,800	9,100	10,400	11,700	0	446	1,746	3,046	4,346



PALM SPRINGS INTERNATIONAL AIRPORT

HNTB

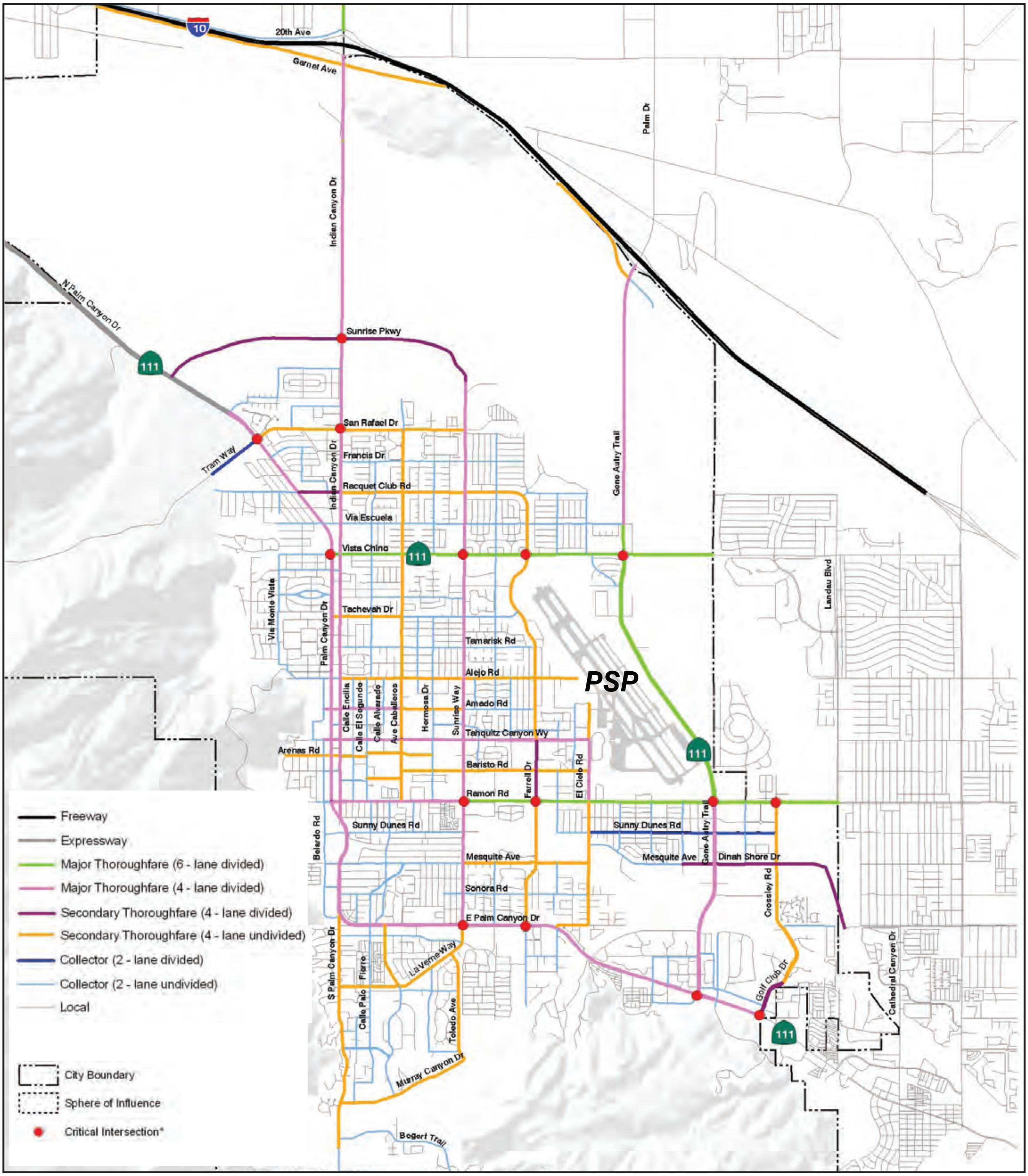
Facility Requirements Summary Stoplight Chart

Figure 4-8

Palm Springs International Airport
Master Plan

2.11 GROUND TRANSPORTATION / PARKING / ACCESS

The physical layout and characteristics of ground transportation facilities and services at Palm Springs International Airport are illustrated in **Figure 2-16** and described in this section. Described are the off-airport access system, on-airport access system and circulation roads, parking facilities, rental car facilities, and chartered and other ground transportation facilities.



Source: City of Palm Springs General Plan

Note: PSP = Palm Springs International Airport

PALM SPRINGS INTERNATIONAL AIRPORT

Regional Roadway Network

Figure 2-16

Palm Springs International Airport
Master Plan

2.11-1 Off-Airport Access System

Vehicular Access

Palm Springs International Airport is located approximately 5 miles south of the I-10 and accessible by vehicle from all directions via the CA-111 and I-10. Access to the Airport terminal building from the northwest along CA-111 is provided via East Tahquitz Canyon Way or East Vista Chino and North Farrell Drive. Access from the north off the I-10 is provided via North Gene Autry Trail, East Ramon Road, and Kirk Douglas Way. Access from the southwest is provided either via the CA-111 to South Gene Autry Trail, East Ramon Road, and Kirk Douglas Way or off the I-10 along East Ramon Road and Kirk Douglas Way.

Transit Access

Bus transit access to the Airport is provided by the SunLine Transit Agency, which provides bus services for the entire Coachella Valley. Currently, SunLine Transit Agency provides a direct transit stop to the Airport via SunBus Line 24 starting at the intersection of North Palm Canyon Drive and West Stevens Road. Passengers are dropped off and picked up in front of City Hall. The SunBus is equipped with bike racks to accommodate passengers traveling with a bicycle. Also located in front of City Hall on East Tahquitz Canyon Way is the Amtrak Palm Springs Thruway bus stop. The Amtrak bus provides connections to the North Palm Springs Amtrak train station, located on North Indian Canyon Drive near the I-10, and to the destinations served by Amtrak nationwide.

2.11-2 On-Airport Access and Circulation Roads

Terminal access is provided from the downtown Palm Springs area via East Tahquitz Canyon Way and from the I-10, CA-111 and cities in southern Coachella Valley ("Resort Cities") via Kirk Douglas Way. The counter-clockwise-flow, one-way loop road, called East Tahquitz Canyon Way, serves the parking facilities, terminal curbfront and recirculation access to the Airport.

Airport Access

From East Tahquitz Canyon Road, vehicles enter a two-lane Airport loop road where access is provided to the short term parking lot. Just before the first turn in the loop, the two lanes divide. The left lane is designated for small (private and commercial) vehicles and the right lane for oversized (e.g. charter buses, delivery and cargo) vehicles and other commercial vehicles (e.g. taxis, charter shuttle, and limos) that access the taxi / bus staging lot south of the Airport. Both lanes are directed to the terminal curbfront. However, the lane for oversized and commercial vehicles is routed towards Kirk Douglas Way where vehicles make a U-turn back towards the terminal loop road. Oversized vehicles and other commercial vehicles can also enter onto Kirk Douglas Way via a one-lane road from the intersection of East Baristo Road and South El Cielo Road. From Kirk Douglas Way, oversized vehicles and other commercial vehicles can enter the taxi / bus staging area or make a the U-turn return trip to the terminal on Kirk Douglas Way located opposite the cargo vehicle exit.

Prior to entering the terminal curbfront area, all vehicles are directed through the 6-lane vehicle inspection plaza. The two lanes on the far right closest to the terminal building are used by oversized vehicles strategically routed to enter the terminal curbfront area from Kirk Douglas Way. The four lanes furthest from the terminal building are used by small vehicles coming from both Kirk Douglas Way and East Tahquitz Canyon Way. The vehicle inspection plaza has security features that have the ability to limit direct vehicular access to the terminals in the event of a heightened security levels and to slow and inspect traffic as necessary. The entrance to the long term parking lot is located just after the vehicle inspection plaza.

Terminal Curbfront

The 750-foot long terminal curbfront consists of a three-lane passenger terminal / inner curb and a three-lane commercial / outer curb separated by a median. The inner curb is used primarily by small private vehicles for loading and unloading with the exception of some commercial vehicles. For example, large charter buses use the inner curb for loading and unloading of passengers. Passenger unloading for large charter buses occurs at the curbside on the south end of the ticketing area. Passenger loading for large charter buses occurs in the space adjacent to the rental car lot at the far end of the terminal curbfront at the north end of the baggage claim area. The curbfront is slightly wider than the other two lanes in the inner curb and provides space allocated for approximately 16 private vehicles at one time. The inner curbfront also provides several parking spaces for Airport police and operations vehicle that can be left unattended. The two outermost lanes in the inner curb are designated as pass-through lanes.

The 750-foot long commercial / outer curb is used primarily for delivery and commercial vehicles. Delivery vehicles may park unattended at the innermost and outermost lanes of the outer curb. These delivery vehicles take up a large amount of space in the unattended area and create congestion in the outer curb during peak times as commercial vehicles wait for delivery vehicles to maneuver into the parking spots. Airport operations vehicles (unattended and attended) and commercial service vehicles (attended), excluding taxis, are designated to park in the innermost and outermost lanes. Taxi and courtesy shuttles are designated to park in the inner lane just across from the baggage claim area of the terminal. The outer curb has space at both the innermost and outermost lanes for approximately 10 private and 12 commercial (e.g. taxi, bus, and limousine) vehicles. The middle lane is used as the pass-through lane. Five spaces are reserved for taxi cab staging to address peak time demands of passengers walking out of baggage claim.

Airport Egress

Upon exiting on the north end of the terminal, the six-lane Airport loop road (inner and outer curb) is reduced to three lanes. The three-lane inner curb is reduced to two lanes and the three-lane outer curb is reduced to one lane. Shortly after this convergence of terminal traffic from the inner and outer curbs, rental car traffic from the rental car ready / return lot flows into the terminal traffic mix. Vehicles exit the Airport at the intersection of East Tahquitz Canyon Way and South El Cielo Road. A recirculating road is also available for vehicles to return to the terminal curb, exit the Airport via Kirk Douglas Way or enter the short term parking lot.

The Airport loop road was designed to be used for Airport related traffic. However, once Kirk Douglas Way was built to serve as an additional access roadway to the Airport loop road, there was an increase in cut-through traffic by drivers of vehicles hoping to bypass traffic congestion on East Ramon Road and S El Cielo Road. This cut-through traffic adds to congestion of the Airport loop road during peak commute times. Speed humps have been installed to slow Airport and discourage cut-through traffic, but staff reports that non-airport user traffic is still congesting the roadways and causing an additional safety and security impact.

2.11-3 Parking

The only public parking facilities owned by the City of Palm Springs are located on Airport property. Airport public parking facilities at PSP are managed by a parking management firm and include two short-term and two long-term lots. The public parking facilities are shown on **Figure 2-17**. Parking rates are $1.00 for every 20 minutes with a maximum of $12 and $8 per day in the short-term and long-term lots respectively.

Public Parking Facilities

The short-term parking lot, which accommodates 377 parking stalls (including 12 handicapped stalls), has two entrances; the first located near the beginning of the terminal curb. The second entrance to the short-term parking lot is located near the north end of the terminal curb. The long-term parking lot's sole entrance is accessed via the Airport loop road just after the vehicle inspection plaza before the south end of the terminal curb. Currently, users who park in the short-term parking lot have the ability to access the long-term lot if parking is unavailable in the short-term lot. However, with the use of barriers, it is not possible for long-term parking lot users to park in the short-term lot. Approximately 538 parking stalls (including 10 handicapped stalls) are available for long-term lot users. The short-term and long-term lots share a common vehicle egress plaza with three pay exit booths. Upon exiting the parking lot, drivers can exit the Airport only to the north via the Airport loop road towards the intersection of South El Cielo Road and Gary Kitchen Way. From here, drivers can access local areas via South El Cielo Road. Drivers can also exit back to the Airport by following the Airport loop road or exit to other resort cities via Kirk Douglas Way.

The short term lot is typically 30 to 50 percent occupied at capacity during any given time of the year. The long term lot can get up to 70+ percent of capacity during the peak season. During the holiday peak season, it is necessary to open an over-flow parking lot on the former site of Taxiway J. Approximately 11 acres of land is used for holiday economy parking and can accommodate approximately 1,000 vehicles. This holiday economy parking lot is not in operation 24 hours a day nor staffed by a cashier. Instead, passengers are required to prepay for their parking. The Airport also provide a shuttle service to conveniently transport passengers from the holiday economy lot to the terminal complex, a distance of approximately a half mile. The pavement of the holiday economy lot is in poor condition.

In addition to the short- and long-term parking lots, Airport users can stage with their vehicles temporarily for free in the cell phone parking lot. The cell phone parking lot, located adjacent to the main terminal roadway about 200 feet to the south, provides short-term parking for arriving passengers to call meeters and greeters when they are ready to be picked up from the Airport. The cell phone lot helps reduce congestion, minimizes the number of vehicles at the terminal curb front, and reduces vehicular emissions from vehicles circling the terminal loop.

Private Parking Facilities

The Airport also has an employee parking lot located southeast of the long-term parking lot. The employee parking lot is located approximately 1,500 feet from the terminal and has 176 parking stalls. A smaller employee parking lot with 16 stalls is located just south of the terminal building. The Airport also has a small multi- use lot with 17 stalls located in front of the terminal and motorcycle parking is located in Section D of the long-term parking lot.

Table 2-14: Parking Supply

Parking Lot	Stall Count
Short-Term (A and B)	377 (includes 12 handicapped stalls)
Long-Term (C and D)	538 (includes 10 handicapped stalls)
Cell Phone	21
Holiday Economy (during peak season only)	~1,000 (11 acres)
Total Public Parking	**933 (1,933 including holiday economy)**
Mixed Use	17
Employee Parking (Terminal)	16
Employee Parking (Kirk Douglas Way)	176
Total Special / Employee Parking	**209**
Total Parking	**1,142 (2,142 including holiday economy)**

Source: HNTB Analysis

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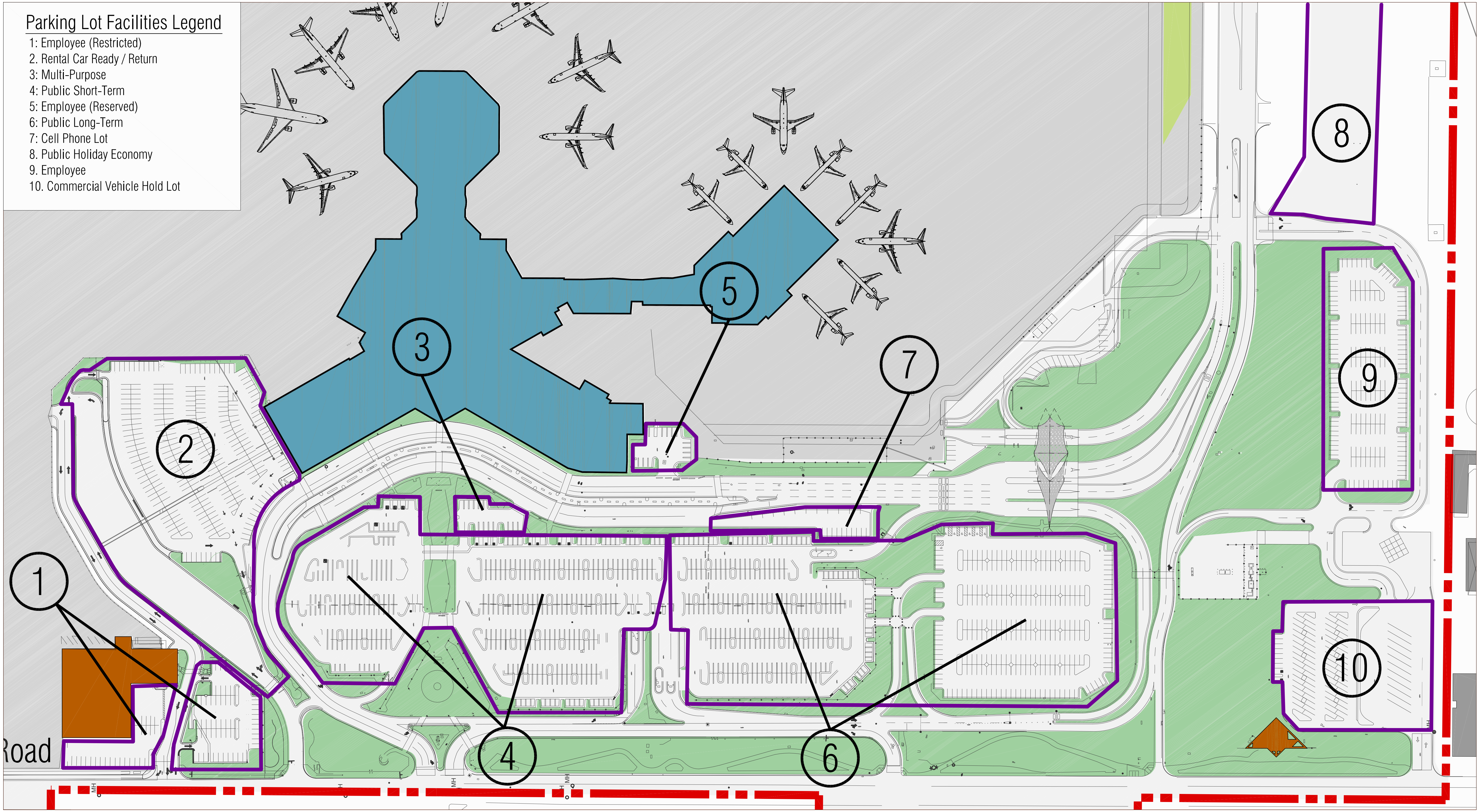


Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N

0 175'

🟧	On-Airport Facility
⬜	Airport Operations Area
- - · - -	Airport Property Line
🟦	Passenger Terminal Building

Parking Facilities
Figure 2-17

Palm Springs International Airport
Master Plan

2.11-4 Rental Car Facilities

The following companies provide rental car services at PSP: Advantage, Enterprise, Avis, National/Alamo, Dollar/Thrifty, Hertz, and Budget. The 2009 market shares of the rental car providers are:

On-Airport	**99.1%**
Hertz	27.0%
National / Alamo	18.9%
Avis	12.0%
Budget	14.4%
Enterprise	14.0%
Dollar	8.4%
Thrifty	4.4%
Off-Airport	**0.9%**
Advantage	0.4%
Cross Roads	<0.5%
Go Rentals	0.5%
Luxury	<0.5%

All of these rental car providers utilize the ready / return lot on Airport property with the exception of Enterprise, who has their facility approximately 1 mile away from the Airport and shuttles users back and forth to that facility. The Enterprise facility is located on Airport property near the intersection at Kirk Douglas Way and Ramon Road.

The rental car ready / return lot, with 279 ready stalls and an approximately 164 return stalls, is located just north of the bag claim area. Rental car reservations desks are located within the bag claim area. Rental car customers retrieve their reservation and pick up their keys at the rental car counters and proceed to their designated numbered rental car stall, conveniently located just outside the north door of the baggage claim area. None of the rental car companies have the ability to install typical "preferred members" facilities at the current site. The companies are apportioned preferred locations and ready stalls based on their market share annually. The return stalls and lanes are located between the ready / return lot and the apron which was recently expanded to accommodate more vehicles. Each on-Airport rental car provider has a designated lane for rental car returns. The walking distance from the return lot to the ticketing lobby area is approximately one quarter of a mile. Passengers dropping off their rental car access the airport terminal by way of a five foot wide walkway that connects the return lot with the baggage claim area. This uncovered walkway does become congested with opposing foot traffic during peak times.

Rental car maintenance and service facilities are all located off-site from the ready/return lots, but are still on Airport property. These facilities are shown on **Figure 2-7**. The rental car providers employ staff to drive returned vehicles to the maintenance facility and to drive serviced vehicles back to the ready lot. Most of the maintenance and service facilities are located along North Civic Drive and East Civic Drive. Rental car provider interviews indicated it takes approximately 10 minutes to locate and transfer a car to the terminal ready lot after it has been serviced and approximately 7 minutes to turn a car around at the maintenance facility.

The shuttling of rental cars between the facilities creates operational inefficiencies for the rental car providers. During peak season, upwards of 50 employees are hired solely to drive the rental cars back and forth between the facilities. Based on input from the tenants, the approximately 17- minute round trip drive time also means increased overhead fuel usage. The service facilities are inadequately sized for peak season operations. There is often inadequate space to store the queue of serviced rental cars that can not fit into the allotted ready spaces. Problems also arise with fuel deliveries. Fuel tankers must navigate their way through the maintenance facilities to unload gasoline for the rental car providers. All of this activity occurs right next to a residential area where homeowners consistently voice their discontent with the sound, air and visual pollution being emitted by these operations.

The Airport has an over-flow rental car storage lot located on Airport property north of Alejo Road and west of Taxiway W. Several hundred additional rental cars are transported to PSP at the beginning of peak season to meet the upcoming demand.

2.11-5 Commercial / Chartered Transportation

About a dozen hotels and resorts offer courtesy shuttle services to and from the Airport. Currently three shuttle companies provide services to transport passengers to and from destinations throughout the Coachella Valley. Other chartered transportation includes services for the disabled or seniors, limousine, taxi, and bus service.

The Airport has an advanced automated vehicle inventory system, known as AVI, located out front and at the vehicle inspection plaza. The system automatically logs all taxis and registered commercial vehicles, queues taxis when demand calls for it, and creates a monthly activity report for administration so they can collect user fees. There is only room for approximately 5 taxi curbside queued positions in front of the terminal. A taxi driver lounge and rest area, located west of the employee parking lot, allows drivers to stage and get relief from the heat while waiting for their position in the queue to advance.

Chartered buses drop off passengers in the unloading area in front of the WestJet curbside check-in area. Charter bus staging is also located in the taxi queue lot. During the peak season, there could be 3-6 buses per hour at the staging area for several hours at a time. The charter bus loading area is located near the rental car lot.

All hired livery vehicles pick up and drop-off passengers at the outer curbfront and drop off passengers at the inner curbfront. Hired vehicles are required to have an AVI transponder that automatically records the vehicle operator upon picking up passengers at the Airport. Transponders have a one-time purchase cost and annual fee per transponder. The transponder used at PSP is different than the transponders used at LAX, John Wayne, and ONT. Passengers bound for commercial vehicles must walk across the main private-vehicle circulation loop road.

The commercial / outer curbfront becomes congested at peak times. All delivery vehicles servicing the Airport also make use of the commercial / outer curbfront area thereby making it difficult for livery drivers to find adequate curbside space to pick up and drop off passengers. Furthermore, the placement of the commercial curbfront at the front of the terminal curbside creates congestion for vehicles entering the airport queue up to drop and pick up passengers.

2.11-6 Pedestrian / Bicycle Access

Pedestrian facilities include sidewalks located on South El Cielo Road and at inner terminal curbfront as well as up through the landscaped walkway located directly up to the terminal. Five crosswalks are also located at the terminal curbfront for pedestrians crossing from the parking lots to the terminal. There are concerns that pedestrian walkways be improved for employees accessing the terminal from the employee parking lot located on the south side of the Airport. Bicycle access is currently not offered at the Airport, but is offered throughout the City of Palm Springs.

2.12 AIRLINE / AIRPORT SUPPORT FACILITIES

2.12-1 General Aviation

PSP has two full-service fixed base operators (FBO) on Airport property to provide general aviation services such as aircraft parking, fueling, supplies, towing, maintenance, car rental, catering, and storage for personal and corporate use of aircraft. Atlantic Aviation provides FBO services on the east side of the Airport, and Signature Flight Support provides FBO services northwest of the terminal building. Approximately 116 general aviation aircraft are based at PSP. Both FBOs are affiliated with a nationally recognized corporate network of FBOs.

Atlantic Aviation FBO

Atlantic Aviation (Atlantic), located on the east side of Runway 13L-31R and shown on **Figure 2-18**, represents one of the country's largest networks of fixed base operations. Atlantic Aviation is a full service fixed base operator with 75% of its services provided the corporate business and private jet market and 25% of its services to the leisure and flight training market of general aviation at PSP.

Services that Atlantic Aviation provides include aircraft fueling, jet and AVGAS sales, aircraft hangars, aircraft tie-downs, in-flight catering, courtesy vehicles, executive / exotic / recreational vehicle rental, limousine and taxi services, personal ramp attendants, military fueling, private vehicle owner parking, access to the U.S. Customs and Border Protection facility, a 3,500-square-foot restaurant and vehicle gas station. Additional services that are provided by subtenants within the Atlantic Aviation leasehold are recreational flying, corporate charter, flight training, news reporting, forestry support, agricultural spraying, VIP flights, Civil Air Patrol, law enforcement flights, emergency medical life flights, search and rescue flights, aerial photography, surveying, real estate tours, aerial inspections, and just-in-time shipping services. **Table 2-15** and **Table 2-16** provides a breakdown of the area and fuel capacity, respectively, under Atlantic Aviation's leasehold.

Atlantic Aviation manages thirty T-Hangars, which are 972 square feet each in size and six additional T-Hangars at 1,246 square feet each in size. Atlantic Aviation also operates three conventional hangars. The first hangar is 30,000 square feet in size and the second conventional at 12,500 square feet in size. Atlantic

Aviation's 7,800-square-foot executive terminal provides on-site concierge services, exclusive passenger area, one large executive conference room, Pilot's Lounge, full kitchen, executive office space, showers and a pool.

Table 2-15: Atlantic Aviation FBO Functional Areas

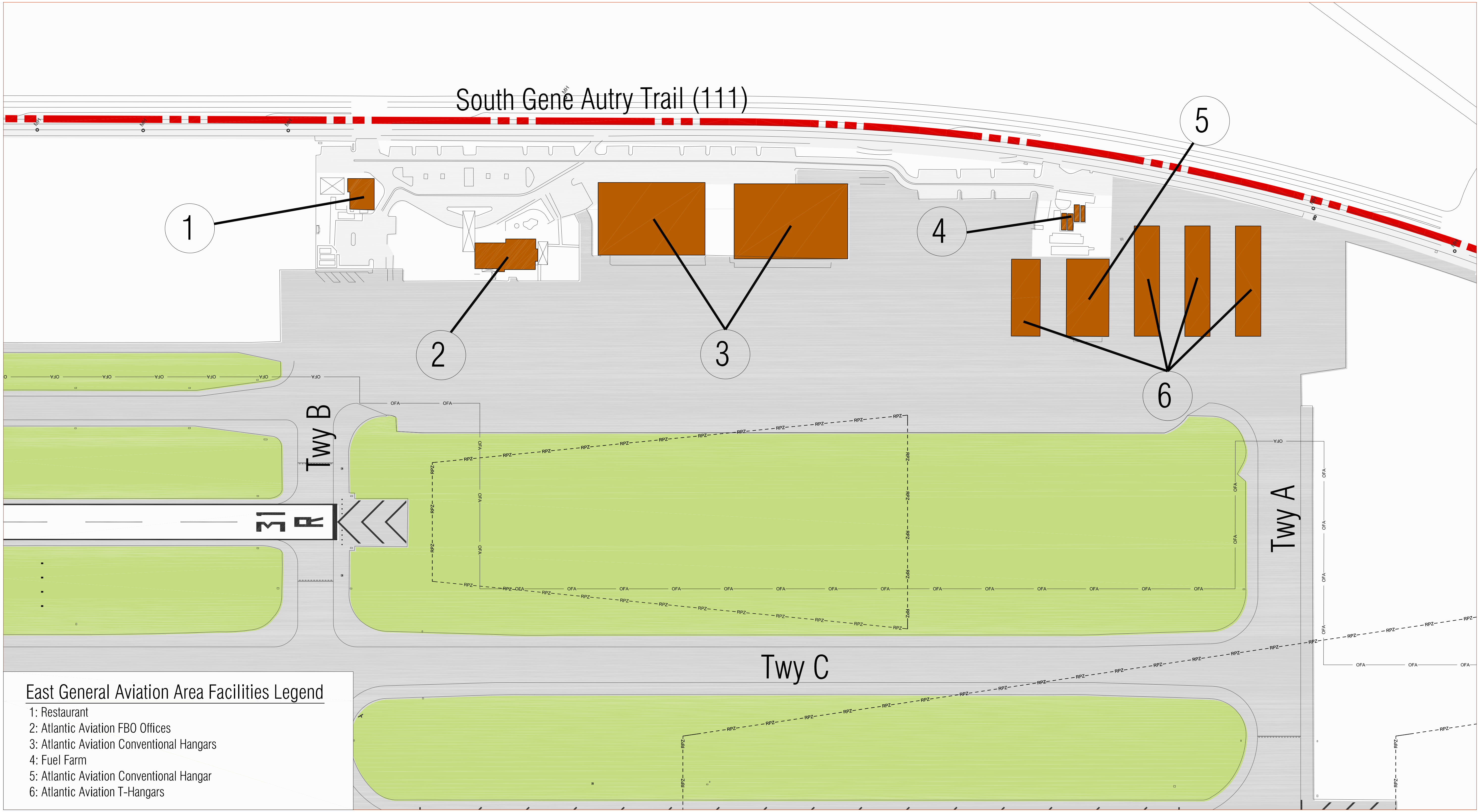
Facility	Area
Ramp	89,400 square yards
Atlantic Terminal	7,800 square feet
Conventional Hangar	32,000 square feet
Conventional Hangar	30,000 square feet
Conventional Hangar	15,000 square feet
T-Hangar	9,900 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
T-Hangar	12,400 square feet
Restaurant	3,500 square feet
Landside	30,400 square yards
Fuel	274,000 square feet
Total Area Leasehold	**28 Acres**

Source: HNTB Analysis

Table 2-16: Atlantic Aviation Fuel Services Inventory

Storage Unit	Capacity (gallons)
Jet A	
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	3,000
Jet A Storage Subtotal	**73,000**
100 Low Lead AVGAS Fuel	
Aboveground Storage Tanks	12,000
Mobile Tanker	1,000
AVGAS Subtotal	13,000
Total Fuel Storage Capacity	**86,000**

Source: HNTB Analysis



East General Aviation Area Facilities Legend
1: Restaurant
2: Atlantic Aviation FBO Offices
3: Atlantic Aviation Conventional Hangars
4: Fuel Farm
5: Atlantic Aviation Conventional Hangar
6: Atlantic Aviation T-Hangars

Source: City of Palm Springs Department of Aviation

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N

0 200'

🟧 On-Airport Facility
▨ Airport Operations Area
—·— Airport Property Line
—OFA— Object Free Area (OFA)
--RPZ-- Runway Protection Zone (RPZ)

East General Aviation Facilities
Figure 2-18
Palm Springs International Airport
Master Plan

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Signature Flight Support FBO

Signature Flight Support (Signature), located west of Runway 13R-31L and just north of the passenger terminal, provides a full range of flight support services. Signature FBO, shown on Figure 2-19, offers service to recreational flying, corporate business aviation flights, flight training, law enforcement flights, emergency medical flights, and is a gateway for high profile visitors. Specific flight services include a shared U.S. Customs and Border Protection facility, aircraft tie-downs, jet fuel sales, courtesy vehicles, inflight catering, hangar rental, and car rental. Signature caters largely to the business travel market with an approximate 45% market share of their business. The remainder of Signature's business is made up of a combination of services to all other facets of general aviation.

In early 2008, Signature completed the construction of a new 6,700-square-foot corporate terminal located at 250 N. El Cielo Road. The modern new terminal is equipped with meeting areas, pilots briefing room, showers and a lounge. Table 2-17 provides a breakdown of the area under Signature's leasehold. Signature operates a total of 20 T-hangars and 16 condo hangars. In addition, Signature manages the 24,000-square-foot Desert Springs Hangar and leases the 7,000-square-foot Desert Aeronautics Maintenance hangar as well as a 12,000-square-foot and 10,000 square-foot hangar from the Airport. Signature's leasehold spans 13 parcels and includes approximately 33 acres. Because all these parcels are spread out over a wide area with other airport tenants in-between, it has been challenging for Signature to plan and expand their facilities. Usually FBO's like to keep their operations s close together as possible to allow for more efficient operations. Unfortunately that has not been the case at PSP Airport due to the mixture of different airport tenants, including the main passenger terminal complex right on the south end of the leasehold.

Table 2-17: Signature Flight Support FBO Functional Areas

Facility	Area
Ramp	84,000 square yards
Signature Terminal	6,700 square feet
Condominium Hangar	30,000 square feet
Condominium Hangar	30,000 square feet
Desert Springs Hangar	31,500 square feet
Conventional Hangar	15,000 square feet
Conventional Hangar	10,000 square feet
Conventional Hangar	10,000 square feet
T-Hangar	11,000 square feet
T-Hangar	11,000 square feet
Desert Aero Maintenance Hangar	30,500 square feet
Landside	108,000 square feet
Fuel	10, 00 square feet
Total Area on Leasehold	**33 Acres**

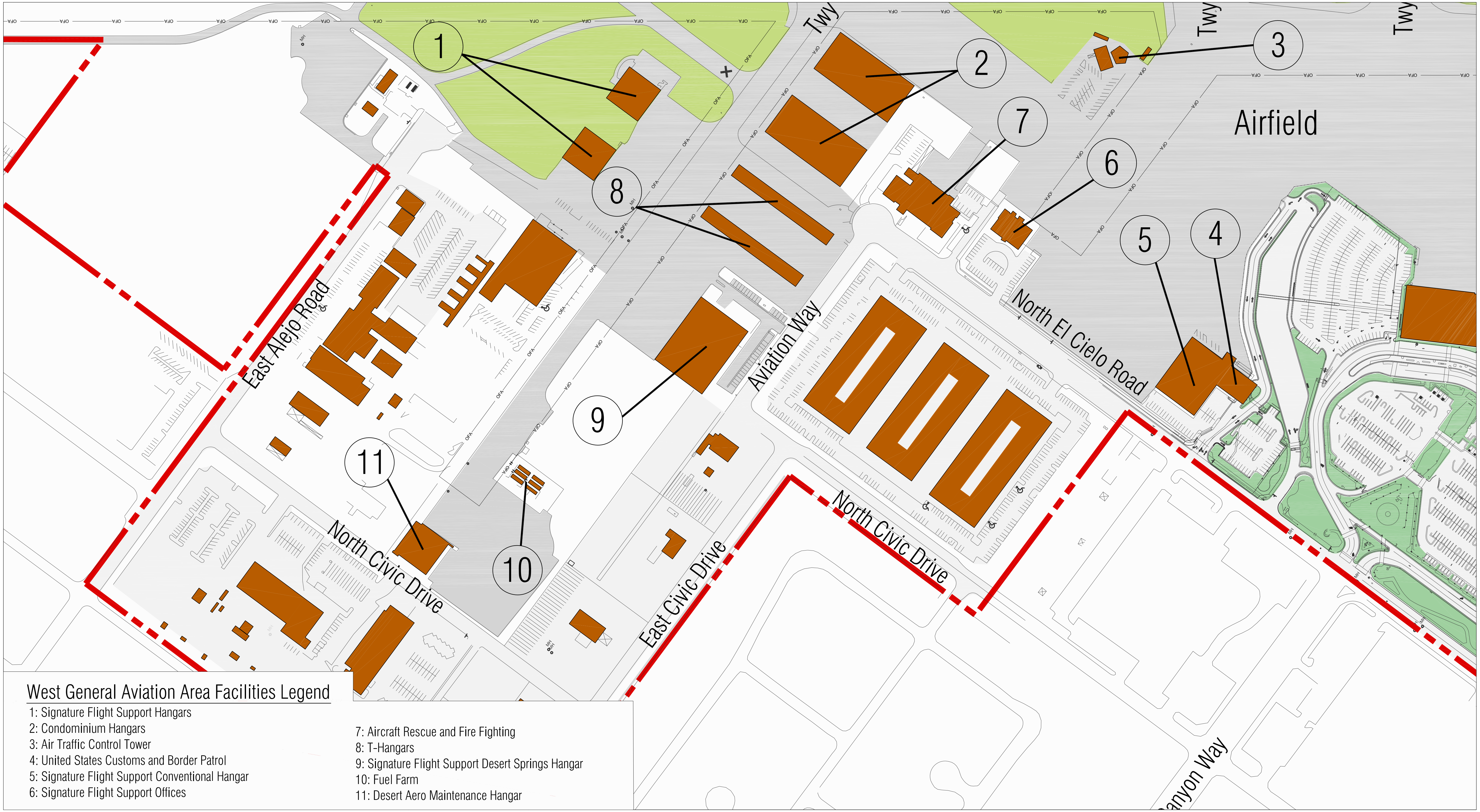
Source: HNTB Analysis

Signature Flight Support has for some time been the contract provider at the Airport for fuel service for air carrier operations. As outlined in **Table 2-18**, Signature maintains five above ground 20,000-gallon Jet A fuel tanks and eight mobile refueling tankers ranging from a capacity range from 7,500 gallons to 10,000 gallons. Airlines establish relationships with their preferred fuel provider, and that provider contracts with Signature to deliver the fuel into plane. In addition to its air carrier refueling business, Signature maintains AVGAS fuel storage in the amount of 13,750 gallons.

Table 2-18: Signature Flight Support Fuel Services Inventory

Storage Unit	Capacity (Gallons)
Jet A Fuel	
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Aboveground Storage Tanks	20,000
Mobile Tanker	10,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	5,000
Mobile Tanker	3,000
Mobile Tanker	7,000
Jet A Storage Subtotal	**135,000**
100 Low Lead AVGAS Fuel (100 LL)	
Aboveground Storage Tanks	12,000
Mobile Tanker	1,000
Mobile Tanker	750
AVGAS Subtotal	**13,750**
Unleaded Gasoline	
Aboveground Storage Tanks	1,000
Off Road Diesel 2	
Aboveground Storage Tanks	1,000
Total Fuel Storage Capacity	**150,750**

Source: Signature Flight Support



West General Aviation Area Facilities Legend
1: Signature Flight Support Hangars
2: Condominium Hangars
3: Air Traffic Control Tower
4: United States Customs and Border Patrol
5: Signature Flight Support Conventional Hangar
6: Signature Flight Support Offices
7: Aircraft Rescue and Fire Fighting
8: T-Hangars
9: Signature Flight Support Desert Springs Hangar
10: Fuel Farm
11: Desert Aero Maintenance Hangar

Source: City of Palm Springs Department of Aviation

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PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N

0 250'

🟫	On-Airport Facility
⬜	Airport Operations Area
—OFA—	Object Free Area (OFA)
—·—·—	Airport Property Line

West General Aviation Facilities
Figure 2-19

Palm Springs International Airport
Master Plan

2.12-2 Cargo

Cargo operations at the Airport are handled exclusively via aircraft belly cargo. At the current time, no heavy freight or express cargo carriers operate at PSP. Air freight bound for and from the Coachella Valley is transported by truck to other regional airports in larger population centers that generate substantial air cargo tonnage and justifies having dedicated all-cargo aircraft. LA/Ontario International Airport handles the majority of air cargo for the Riverside County region. This is typical for small cities and airports that are short distances from major metropolitan areas. Because the Coachella Valley relies so heavily on tourism as a prime industry, and the amount of air freight being generated is minimal compared to an airport in an industrial / manufacturing based city, the integrated (air and ground) air cargo carriers find it more efficient and cost effective to move the air freight by ground to/from the aircraft serving the large cities.

2.12-3 Support

Aircraft Rescue and Fire Fighting

In 1975 the current ARFF building was constructed. Measuring 17,615 square feet in size, the ARFF building at PSP was built to act as a dual role facility: as an ARFF facility for the airport and as a Palm Springs city fire station structural unit.

The ARFF is located on the west side of the airport, north of the terminal area and east of the FAA Air Traffic Control Tower. The ARFF station is equipped to handle emergencies (e.g. emergency medical services, fire protection services, fire protection planning, fire prevention, hazardous materials response, and public education) on and off airport. The vehicle bay area holds a combination of structural and ARFF vehicles and has 4 bays that open to the landside on the west side of the building and airside on the east side. In addition to the vehicle bays, the ARFF building houses offices, a control room, dormitories, showers, gym, kitchen/dining room, lounge and firefighting-related maintenance facilities (hoses, breathing apparatuses etc...).

The ARFF facility is a certified 24-hour FAR Part 139 facility. FAR Part 139 is used to determine the aircraft rescue and firefighting Index (A through E) for airports serving certificated air carriers/ commercial service based on the length of the longest aircraft operated by an air carrier performing an average of five scheduled departures per day (computed on an annual basis). Determination of the appropriate amount of ARFF equipment for an airport is based on the airport index. The five ARFF indices are displayed in **Table 2-19** with details of specific requirements to meet each index. PSP satisfies the requirements for ARFF Index C and has the current capacity to handle even higher indices if the airline traffic dictated it.

In 2003, the Airport replaced all three of its ARFF vehicles with modern new units using AIP grant funding. The facility has an Oshkosh STI-3000 quick-attack vehicle carrying 3,000 gallons of water with a mounted “Snozzle” system that allows the vehicle to pierce an aircraft fuselage. In addition to the quick-attack vehicle, the Airport received two new Oshkosh STI-1500 1,500 gallon trucks. A complete inventory of heavy mobile equipment for the ARFF facility can be found in **Table 2-20.**

Table 2-19: ARFF Index Classifications

Airport Index	Required No. of Vehicles	Aircraft Length (feet)	Schedule Daily Departures	Agent Plus Water for Foam
A	1	< 90	> 1	500# Sodium-based DC or Halon 1211 or Clean Agent; or 450# Potassium-based DC plus water to produce 100 gal of AFFF.
		≥ 90, < 126	< 5	
B	1 or 2	≥ 90, < 126	≥ 5	Index A plus 1,500 gal Water
		≥ 126, < 159	< 5	
C	**2 or 3**	**≥ 126, < 159**	**≥ 5**	**Index A plus 3,000 gal Water**
		≥ 159, < 200	**< 5**	
D	3	≥ 159, < 200	≥ 5	Index A plus 4,000 gal Water
		≥ 200	< 5	
E	3	≥ 200	≥ 5	Index A Plus 6,000 gal Water

Source: 14 CFR Part 139

Notes: DC = Dry Chemical; AFFF = Aqueous Film Forming Foam

Table 2-20: ARFF Vehicle Inventory

Quantity	Year of Manufacture	Description
1	2003	Oshkosh STI-3000 ARFF vehicle 420 Gal. Foam, 3000 Water, Snozzle equipped
2	2003	Oshkosh STI-1500 ARFF vehicle 210 Gal. Foam, 1500 Water
1	2005	Emergency Mobile command center (Shared between Fire Dept., Police Dept. and Airport)
1	1999	Conventional Pierce Firetruck Aerial Platform (85 ft)
1	2008	Conventional Pierce Firetruck Ladder (105 ft)
1		Wildland all terrain vehicle, 500 Gal. water with foam
1		Mass casualty module
1		Foam trailer
1		Pickup truck
1		Mobile water supply vehicle, 1,800 Gal.

Source: Palm Springs Fire Department

The City of Palm Springs Fire Department Station 442 provides all primary ARFF services for the Airport. In addition to emergency services (medical, fire protection, fire protection planning, fire prevention, hazardous materials response, and public education[10]), ARFF personnel also participate in daily inspections of the airfield, to allow staff to maintain a high level of familiarity with the complex airfield configuration of runways, taxiways, and ramps. As required by the Federal Aviation Administration (FAA), the department must maintain recurrent training and there is an actual aircraft fuselage on-site for simulating rescue and extinguishing aircraft fires using truck turrets and hand lines..

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[10] City of Palm Springs General Plan, 2007

In alert situations that present a high magnitude of exposure, mutual aid services are called in to assist the ARFF Division. Landside and structural fire responses are also provided by station 442. With its access to AOA and to the landside, the facility is uniquely positioned to assist in all emergencies at PSP. There is also a separate building, which is scheduled for replacement in 2010, that serves for ARFF initial and recurrent classroom training.

Safety and Security

The Palm Springs Police Department provides the law enforcement support to PSP. These law enforcement officers are responsible for patrolling the Airport, responding to security screening alerts, traffic accidents, traffic control, security patrols, investigating crimes which occur on airport property and serve as a deterrent to criminal activity or harm to property. In addition, the Police Department's Airport Detail has a canine unit for explosives detection.

U.S. Customs and Border Protection

U.S. Customs and Border Protection maintains a one-agent staffed general aviation aircraft clearance operation that is on-call 24 hours a day at Palm Springs International Airport and requires a minimum advanced notice of four hours. The facility is located in the same building that Signature Flight Support FBO used to occupy. The 5,434 square-foot facility has the capability of handling aircraft with a maximum of 15 passengers and crew. Arriving international aircraft taxi to the ramp in front of the Customs facility and an officer will instruct the passengers to deplane and enter the facility for appropriate INS processing and handling.

The offices used by U.S. Customs are owned and maintained by the airport as stipulated in an agreement. The Airport Department is also responsible for reimbursing the federal government for all expenses associated with staffing the operation. The Airport then charges a User Fee to the aircraft that call for the service and that fee is collected by the FBOs. The operation is not designed or intended to handle international airline flight. That would require a completely separate terminal and staffing to satisfy the Federal Government’s standards, including being designated a port of entry eligible for accepting and clearing international commercial airline service. PSP Airport’s Canadian airline inbound flights are pre-cleared in Canada prior to entering the United States.

FAA Air Traffic Control Tower

The Air Traffic Control Tower (ATCT) is located west of Taxiway W between Taxiways G and W-3 on the west side of the airfield. The facility used to house both the ATCT and Terminal Radar Approach Control (TRACON) until 2007 when TRACON functions were consolidated to the Southern California TRACON center in San Diego. A new $24 million ATCT to replace the existing facility is expected to come online in 2014. The new facility will stand approximately 156 feet tall and will follow the standard FAA ATCT design protocol. The tower will be located approximately 50 feet to the north of the existing facility.

Airline Maintenance

SkyWest Airlines leases airport property and operates an aircraft maintenance facility east of Runway 13L-31R and north of Atlantic Aviation FBO. The facility sits on an area of 5.62 acres with approximately 50,000 square feet of office and hangar space, 11,630 square yards of ramp, and 90,250 square feet of landside area. The facility provides C-checks for SkyWest's Embraer 120 Brasilia aircraft and overnight checks for SkyWest's CRJ fleet. SkyWest operates the Embraer 120, CRJ 200, CRJ 700, CRJ 700ER, and CRJ 900 LR on behalf of United Express and Delta Connection.

2.12-4 Infrastructure / Utilities

The Airport shares a cogeneration station with the City of Palm Springs, which provides the electricity, air conditioning, and heating for the Airport as well as other city facilities including City Hall and Police Headquarters. Cogeneration involves using a natural gas energy source to produce electricity and steam to meet energy needs. In addition to the co-generation facility, the Airport terminal also has two, 250-ton chillers used to cool terminal facilities during the hot summer months.

Electrical service is provided by Southern California Edison Company (SCE). SCE maintained a distribution capacity of 17,000 megawatts under optimal operating conditions in 1995. The Airport used approximately 23,000 kilowatt hours per day in 1995.

Natural gas service is provided by the Southern California Gas Company (SCG). The Airport uses approximately 50,000 cubic feet of natural gas per day in 1995.

Telephone service is provided by Verizon Communications. Cable service is provided by Time Warner Cable.

Solid waste service is provided by Palm Springs Disposal Services (PSDS). Solid waste is currently disposed of at the Edom Hill landfill in Cathedral City and the Eagle Mountain landfill in eastern Riverside County. As of 1995, solid waste generated from Airport uses approximated 17,000 pounds per day. To minimize solid waste generated at the Airport, the Airport has a recycling policy and program.

Wastewater disposal service is provided by the City of Palm Springs at the City of Palm Springs Wastewater Treatment Facility. As of 1995, the Airport approximated 950,000 gallons of wastewater per day. Sewer lines include leading to the Airport include:

- 15" sewer line located beneath Gene Autry Trail and Ramon Road
- 24" line within the Farrell Drive right-of-way
- 12" line beneath El Cielo Road

Water distribution lines serving the Airport include:

- 12" line located beneath Gene Autry Trail from Ramon Road to Vista Chino and along Ramon Road south of the Airport.

- 12” line located beneath El Cielo to East Tahquitz Canyon Way which becomes an 8” line until Aviation Drive
- 12” line on Farrell Drive west of the Airport
- 9” line beneath Aviation Way and Civic Center Drive
- 12” line located beneath Alejo Road
- 30” line beneath Vista Chino

The Airport is located within the Riverside Flood Control Agency’s Palm Springs Area and has an Airport Storm Drain Master Plan pertaining to storm drainage and flood control.

Chapter 5: Master Plan Alternatives

5.1 INTRODUCTION

An outcome of the master planning process is the recommendation of an airport development plan. The recommended development plan is the master plan alternative that best addresses predefined goals and objectives, the aviation activity forecast demand, and accommodates facility requirements. The recommended master plan alternative is displayed on the Airport Layout Plan (ALP) and will ultimately direct future airport capital development.

The process leading up to the selection of a recommended alternative, generally called the alternatives development process, involves the development of multiple alternatives. These alternatives are continually refined and evaluated based on predefined master plan goals and objectives, as well as environmental and financial considerations.

The alternatives development process typically proceeds according the following basic steps:

1) Identify the primary or key requirements,
2) Develop concepts that accommodate those requirements,
3) Evaluate the concepts,
4) Refine the concepts into alternatives,
5) Evaluate the alternatives, and
6) Select and recommend a master plan alternative.

For PSP, following the completion of the aviation activity forecast and facility requirements analyses, Airport Staff and the Consultant Team met to determine an appropriate direction or underlying philosophy for the alternatives development process. This Chapter presents that philosophy and describe the developed alternatives.

5.2 ALTERNATIVES DEVELOPMENT PROCESS

A direction for the development of alternatives was influenced by results of the aviation activity forecast and facility requirements.

The PSP aviation activity forecast shows a potential for substantial growth at PSP in the long-term over the next 20 years. Total domestic and international enplanements are forecast to increase from just under 0.8 million in 2008 to 1.4 million in 2028, an average annual increase of 3.1 percent. Total aircraft operations are estimated to increase from 72,876 operations in 2008 to 108,875 operations in 2028. These forecast results reflect the recognition and consideration of the current national economic recession. It was recommended that alternatives be developed to also consider and be reflective of the potential financial hardships faced by the aviation industry.

Facility requirements were prepared for all functional airport components (airside, terminal, landside, general aviation, support / maintenance). However, facility requirement analyses indicate that accommodating the growth at PSP will require key terminal and landside improvements, particularly in the following areas:

- Baggage claim / transfer areas,
- Ticketing lobby,
- Rental car facilities, and
- Employee parking lot.

Improvements are recommended immediately in the baggage claim and baggage transfer areas, which already, in 2008, show deficiencies of about 10,000 square feet for each area. When passenger activity levels reach approximately 1.25 million enplanements (in approximately 2023), the deficiencies will more than double. In the same planning activity level year, ticketing area deficiencies will reach approximately 5,000 square feet. On the landside, rental car facility requirements indicate deficiencies of approximately 1.5 acres when planning activity levels reach approximately 1.0 million enplanements (by approximately 2013). Employee parking lot area deficiencies also reach approximately 1.5 acres in the same plan activity level year.

Following the completion of the aviation activity forecast and facility requirement analyses, alternatives were developed to consider the current economic recession and address all major facility area deficiencies. In addition, it was determined that any terminal improvements, or expansions would be made to the existing facility or directly to the south of the existing facility. The factors leading to the determination to keep the terminal in its existing location or expand south were based on the following assumptions.

- The Palm Springs International Airport will remain at its current site due to the cost and complexity of airport relocation.
- The terminal complex will not be relocated to another location on airport property due to the cost and complexity of such a move.
- The terminal complex is considered to be a community icon.
- The view corridor axis from the landscaped plaza near the Bono Concourse, through the hexagonal meeter greeter lobby, and along the landscaped view corridor in front of the airport terminal building is important to preserve.
- Expanding the terminal complex north or east is not advised due to potential airfield impacts.

Alternatives were also developed in consideration of the established Master Plan Goals & Objectives as documented in Chapter 1 and in consideration of alternatives proposed in the previous 2003 Master Plan.

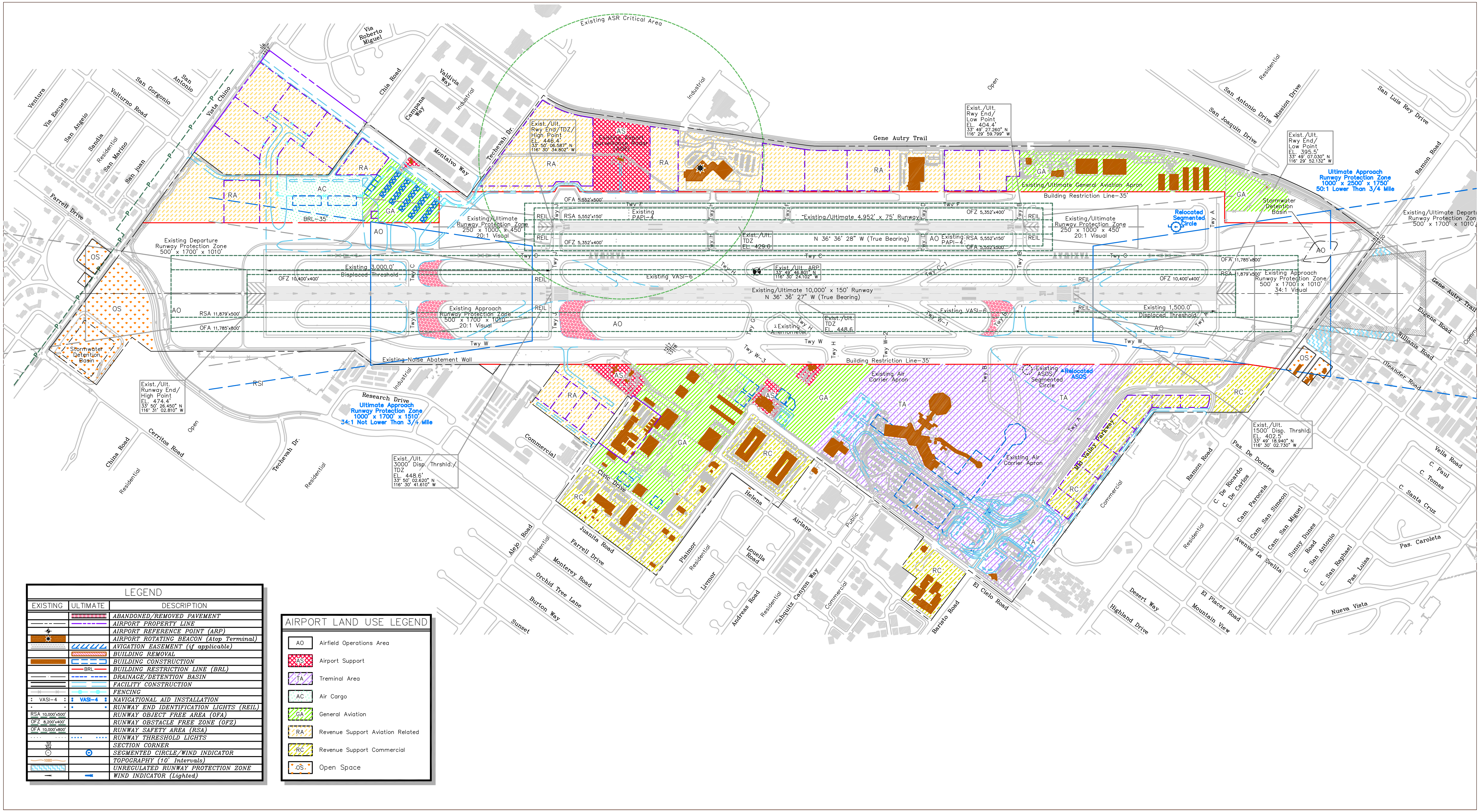
5.2-1 Review of the 2003 Airport Master Plan Update

The previous Airport Master Plan Update was completed in 2003. The 2003 Master Plan Update was primarily focused on the development of additional gate positions, specifically through the construction of an additional second level octagonal concourse located south of the Bono Concourse. In 2007, the

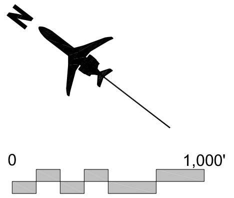
Airport opened the Regional Concourse, an eight-gate ground loaded concourse that accommodates all of the Airport's regional flights. Although the new Regional Concourse was not proposed in the 2003 Master Plan Update, the facility is generally located on the footprint of the concourse proposed in the 2003 Master Plan. Proposed landside improvements were intended to increase parking capacity, alleviate curbside congestion, and improve rental car facilities.

The airfield development proposed in the previous Master Plan considered enhancements to safety and efficiency. The Master Plan proposed a reconfiguration of the Runway 13R-31L exit taxiways. Five replacement high speed exits were proposed along with reconstruction and realignment of five perpendicular taxiways. Declared distances were recommended and implemented to remedy the non-standard Runway Safety Area at the south end of Runway 13R-31L. The Master Plan also proposed implementing a Category I Instrument Landing System (ILS) approach for Runway 31L. Chapter 4 discusses why implementation of an ILS is not proposed in this Master Plan Update.

The previous land-use plan preserved considerable land for general aviation expansion and cargo processing. The options presented for development on the west side of the airport on the site of the seasonal rental car overflow storage lot north of Alejo Road included a new cargo facility, a new consolidated rental facility, and new corporate general aviation facility. Cargo, general aviation, and commercial facilities were proposed for development on the east side of the airport. **Figure 5-1** presents the Land Use Plan from the 2003 Airport Master Plan Update.


Existing ASR Critical Area
Gene Autry Trail
Existing/Ultimate 4,952' x 75' Runway
N 36° 36' 28" W (True Bearing)
Existing/Ultimate 10,000' x 150' Runway
N 36° 36' 27" W (True Bearing)
Existing/Ultimate General Aviation Apron
Building Restriction Line–35'
Existing Air Carrier Apron
Existing Noise Abatement Wall
Existing Departure Runway Protection Zone 500' x 1700' x 1010'
Existing Approach Runway Protection Zone 500' x 1700' x 1010' 34:1 Visual
Existing/Ultimate Runway Protection Zone 250' x 1000' x 450' 20:1 Visual
Ultimate Approach Runway Protection Zone 1000' x 2500' x 1750' 50:1 Lower Than 3/4 Mile
Ultimate Approach Runway Protection Zone 1000' x 1700' x 1510' 34:1 Not Lower Than 3/4 Mile
Existing 3,000.0' Displaced Threshold
Existing 1,500.0' Displaced Threshold
Stormwater Detention Basin
Relocated Segmented Circle
Relocated ASOS
Research Drive
Civic Drive
Airport Center Drive
Ramon Road
Farrell Drive
Vista Chino
Tahquitz Canyon Way
El Cielo Road
Mid Valley Parkway
Residential
Commercial
Industrial
Open
LEGEND
EXISTING
ULTIMATE
DESCRIPTION
ABANDONED/REMOVED PAVEMENT
AIRPORT PROPERTY LINE
AIRPORT REFERENCE POINT (ARP)
AIRPORT ROTATING BEACON (Atop Terminal)
AVIGATION EASEMENT (if applicable)
BUILDING REMOVAL
BUILDING CONSTRUCTION
BRL
BUILDING RESTRICTION LINE (BRL)
DRAINAGE/DETENTION BASIN
FACILITY CONSTRUCTION
FENCING
VASI–4
NAVIGATIONAL AID INSTALLATION
RUNWAY END IDENTIFICATION LIGHTS (REIL)
RSA 10,000'x500'
RUNWAY OBJECT FREE AREA (OFA)
OFZ 8,200'x400'
RUNWAY OBSTACLE FREE ZONE (OFZ)
OFA 10,000'x800'
RUNWAY SAFETY AREA (RSA)
RUNWAY THRESHOLD LIGHTS
SECTION CORNER
SEGMENTED CIRCLE/WIND INDICATOR
TOPOGRAPHY (10' Intervals)
UNREGULATED RUNWAY PROTECTION ZONE
WIND INDICATOR (Lighted)
AIRPORT LAND USE LEGEND
AO Airfield Operations Area
AS Airport Support
TA Treminal Area
AC Air Cargo
GA General Aviation
RA Revenue Support Aviation Related
RC Revenue Support Commercial
OS Open Space

Source: Coffman Associates, 2003 Palm Springs International Airport Master Plan Update



PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

2003 Airport Master Plan Land Use Plan

Figure 5-1

Palm Springs International Airport
Master Plan

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5.2-2 Airport Improvement Projects Since the 2003 Master Plan Update

The following projects have been completed at the Airport since the 2003 Master Plan was adopted (note that these projects were not necessarily recommended in the 2003 Master Plan):

- Opening of the Vehicle Inspection Plaza – 2003
- Eight gate ground-loaded 20,000 ft^2 Regional Concourse – 2007
- Consolidation of the Federal Aviation Administration (FAA) Terminal Radar Approach Control (TRACON) Facility to the Southern California TRACON – 2007
- Expansion of the rental car ready and return lot – 2007
- Signature Flight Support FBO Terminal – 2008
- Additional general aviation hangars on the west side of the Airport
- Expansion of the U.S. Customs and Border Patrol Facility – 2008

5.3 2009 AIRPORT MASTER PLAN ALTERNATIVES

In consideration of the current financial situation, facility requirements, and Master Plan Goal and Objectives, long-term development alternatives which meet aviation activity forecast demand through 2028 were developed. These long-term alternatives account for:

- Providing long range growth through 2028
- Maintaining a high level of service
- Maintaining the Airport's aesthetics consistent with the overall mid-century modern architecture present in Palm Springs

In addition, it was determined a near-term plan be developed to address the near-term deficiencies with rental car facilities and the terminal processor in a financially prudent manner. The near-term alternative accounts for:

- Providing modest improvements (no major expansion of the terminal footprint) with regards to terminal facilities
- Assumption that CFCs will be a feasible source of funding for improvements to rental car facilities
- Assumption that long-range demand at PSP will not be fully accommodated (but does not prevent or complicate envisioned long-range alternative improvements)

The current Master Plan alternatives are developed based upon the forecast facility requirements. The development process involved several stages of refinement, starting with a development of concepts for each of the four airport functional areas: airside, terminal, landside (specifically the landside area on the southwest corner of the airport property surrounding the terminal area), and support (includes general aviation).

Through a concept refinement process, which involved key airport staff, tenants, and other stakeholders, the terminal and landside concepts were integrated into combined terminal / landside alternatives because of their close functional interdependencies. In addition, following the identification of rental car facility requirements, several rental car concepts were developed and integrated into the terminal / landside alternatives. For the presentation of alternatives in this Chapter, airfield and support alternatives are presented as separate alternatives because the airside and support facilities operate somewhat independently from the terminal / landside area. Finally, all alternatives are combined in a future land use map, which is described later in this Chapter.

The alternatives described are organized by the following functional airport components:

- Airside
- Terminal
- Landside
- Support
- Land Use Plan

5.4 AIRSIDE ALTERNATIVES DEVELOPMENT

The Facility Requirements identified that the airfield has adequate capacity to serve forecast operations beyond 2028. Section 4.3 analyzed the geometric and safety area requirements for upgrading the general aviation runway, Runway 13L-31R, to an air-carrier capable runway. The forecast results, however, do not support the upgrading of Runway 13L-31R within the planning horizon for the purpose of reducing anticipated delays or increasing capacity at PSP. The airside development alternatives from the previous Airport Master Plan Update recommended a reconfiguration of the runway exit taxiways. Based on the updated forecast activity levels, a reconfiguration of the runway exit taxiways is not proposed in this Master Plan Update.

The main airside requirement from Chapter 4 is to improve the non-standard Runway Safety Area (RSA) on the south end of Runway 13R-31L. An RSA is a graded area at the end of the runway that is designed to protect an aircraft in the event of an aircraft overrun, undershoot, or aborted take-off. A standard RSA for an air-carrier runway extends 1,000 feet from the end of the runway and is 500 feet wide centered on the runway centerline. The south end of Runway 13R-31L only extends 857 feet from the end of the runway. To satisfy the requirement of having a 1,000 foot extension of the RSA, the Airport currently operates with declared distances. Under declared distances, the effective useable end of the runway is 143 feet shorter than the full paved length of the runway. Declared distances, however, are not a preferable solution by the FAA for achieving the standard RSA end length. Four different alternatives for meeting the standard RSA requirement are discussed below.

5.4-1 Airside Alternative 1 – EMAS

The first alternative for meeting the standard RSA length is through the use of an Engineered Materials Arresting System (EMAS). An EMAS is a bed of lightweight crushable concrete blocks that dissipates the kinetic energy of an aircraft. It is similar in concept to the gravel bed on a runaway truck escape found on highways with steep downhill grades. An EMAS is considered an acceptable alternative to maintaining a full 1,000-foot RSA. A standard EMAS at minimum needs only to extend 600 feet past the end of the runway and be as wide as the runway plus the width of the shoulders.

A standard EMAS is designed to halt an aircraft that has exited the end of the runway at a speed of 70 knots. An EMAS consists of three main components; the first component is a set back from the end of the runway. The setback is a graded area of variable length that transitions into the second component, the lead-in ramp. The lead-in ramp is a sloped area that assists in slowing down approaching aircraft. The final component of the EMAS is a crushable concrete block arresting bed that increases in depth. **Figure 5-2** depicts the general layout of an EMAS on the south end of Runway 13R-31L. A detailed analysis would need to be conducted to determine the appropriate length of the setback, lead-in ramp and arresting bed.

Implementation of EMAS would allow aircraft to utilize 100% of the available runway pavement for calculating allowable take-off distances.

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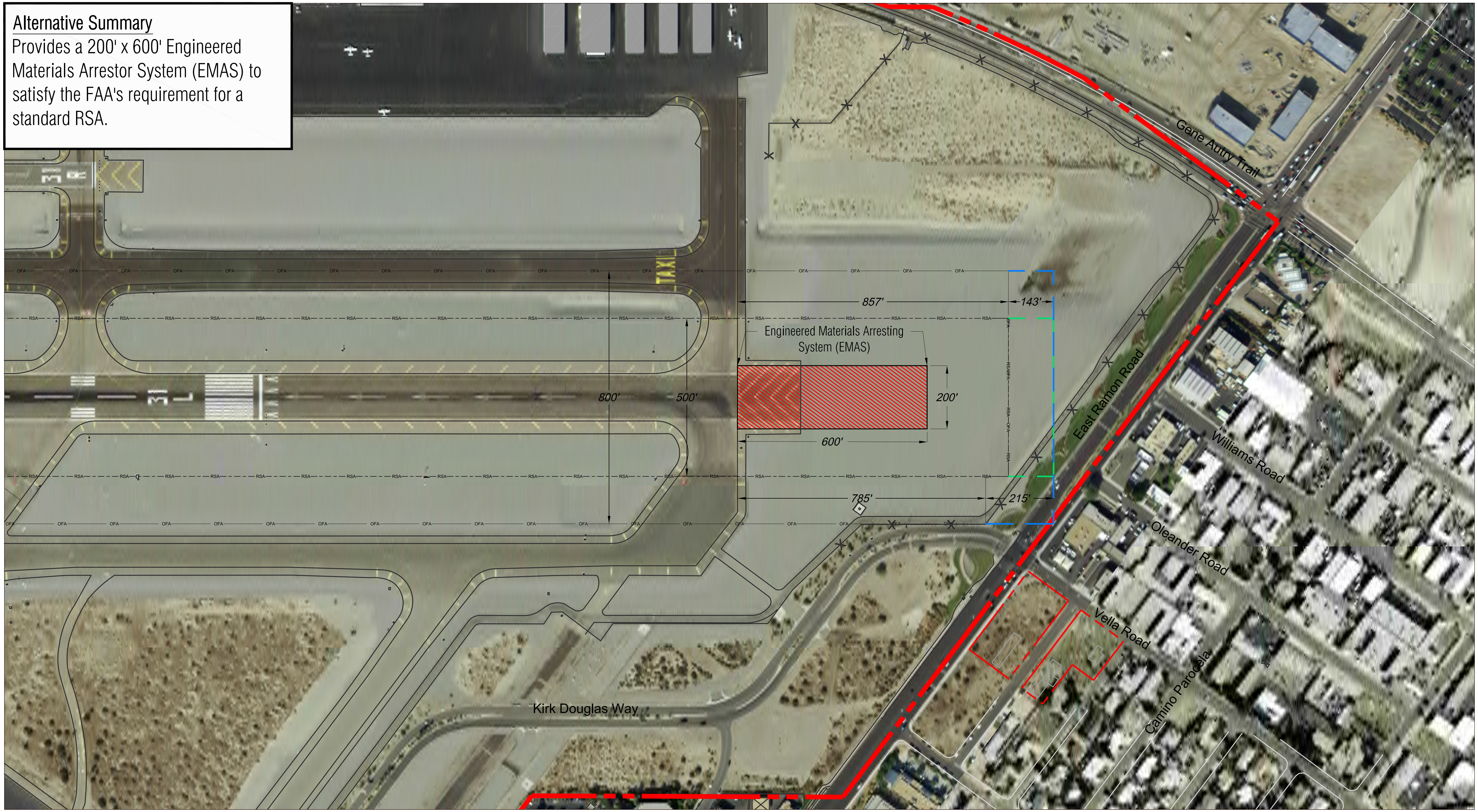
Alternative Summary

Provides a 200' x 600' Engineered Materials Arrestor System (EMAS) to satisfy the FAA's requirement for a standard RSA.



Source: HNTB Analysis

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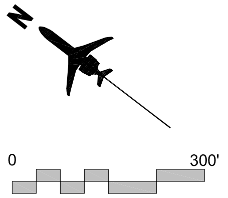
MASTER PLAN UPDATE



- Airport Property Line
- Existing Runway Object Free Area (OFA)
- Fully Extended Runway Object Free Area (OFA)
- Existing Runway Safety Area (RSA)
- Fully Extended Runway Safety Area (RSA)
- ▨ Engineered Materials Arresting System (EMAS)
- X Perimeter Fence

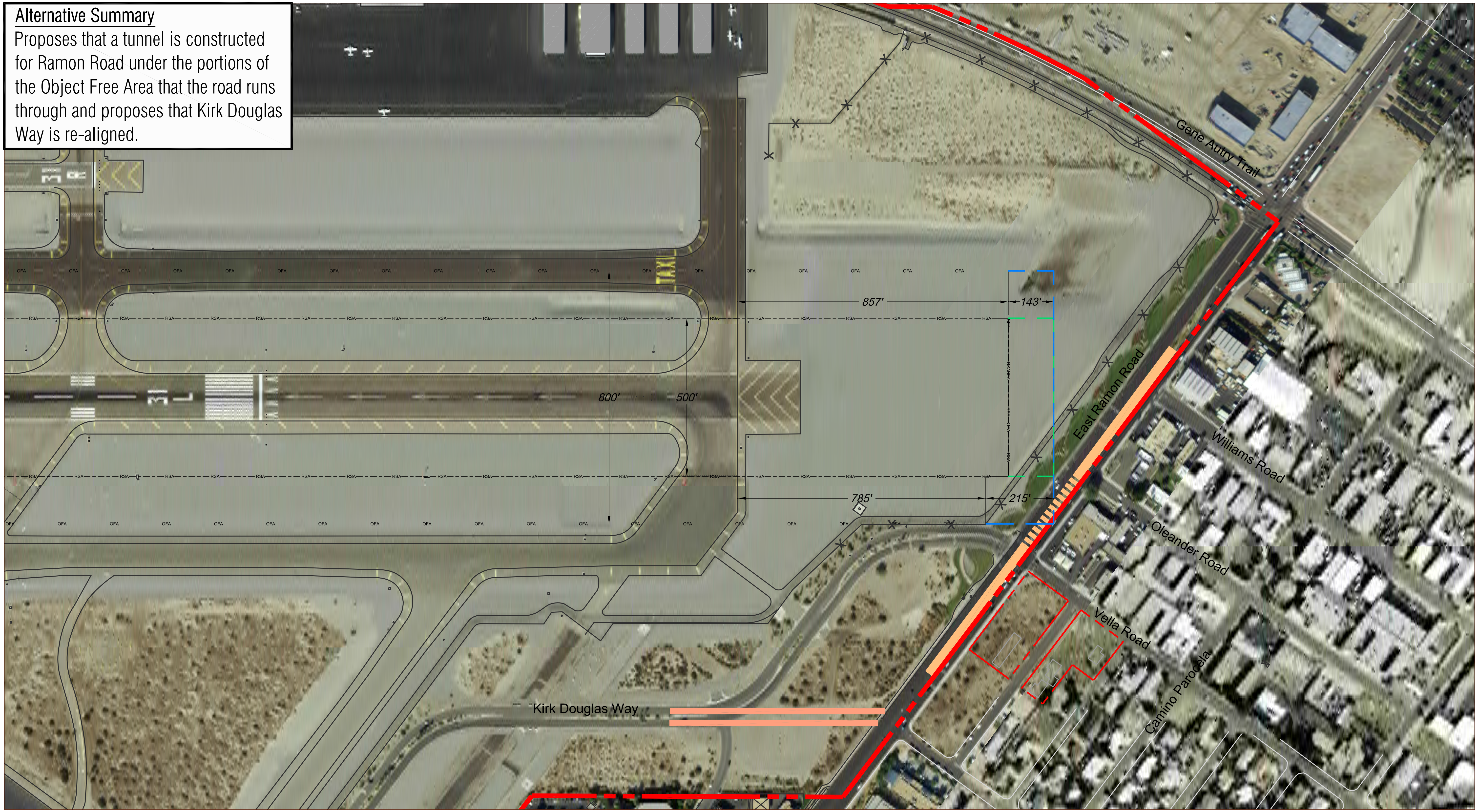
Alternative 1 - Runway Safety Area - EMAS

Figure 5-2

Palm Springs International Airport
Master Plan

5.4-2 Airside Alternative 2 – East Ramon Road Tunnel

The second alternative for meeting the standard RSA length is to construct a tunnel for the portion of East Ramon Road that runs through the standard RSA and Object Free Area (OFA) dimension areas. An illustration of a potential tunnel is presented in **Figure 5-3**. Detailed surveying and analysis is needed to determine if it would be possible to tunnel the westbound direction of East Ramon Road only. Eastbound East Ramon Road is an arterial that provides access to commercial properties. Additionally, Kirk Douglas Way would be realigned to feed back into East Ramon Road. The realignment of Kirk Douglas Road, however, provides additional future opportunities for airside and landside development.



Alternative Summary
Proposes that a tunnel is constructed for Ramon Road under the portions of the Object Free Area that the road runs through and proposes that Kirk Douglas Way is re-aligned.

Source: HNTB Analysis

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PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N
0 300'

- Airport Property Line
- Existing Runway Object Free Area (OFA)
- Fully Extended Runway Object Free Area (OFA)
- Existing Runway Safety Area (RSA)
- Fully Extended Runway Safety Area (RSA)
- Potential Ramon Road Tunnel Lead-in Section
- Potential East Ramon Road Tunnel Section
- Potential Kirk Douglas Way Realignment
- Perimeter Fence

Alternative 2 - Runway Safety Area - Tunnel

Figure 5-3

Palm Springs International Airport
Master Plan

5.4-3 Airside Alternative 3 – East Ramon Road Realignment

The third alternative for meeting the standard RSA length is to realign East Ramon Road to the south around the standard dimension Runway 13R-31L RSA and OFA. **Figure 5-4** depicts a potential realignment of East Ramon Road and the properties that the airport would potentially require acquisition.

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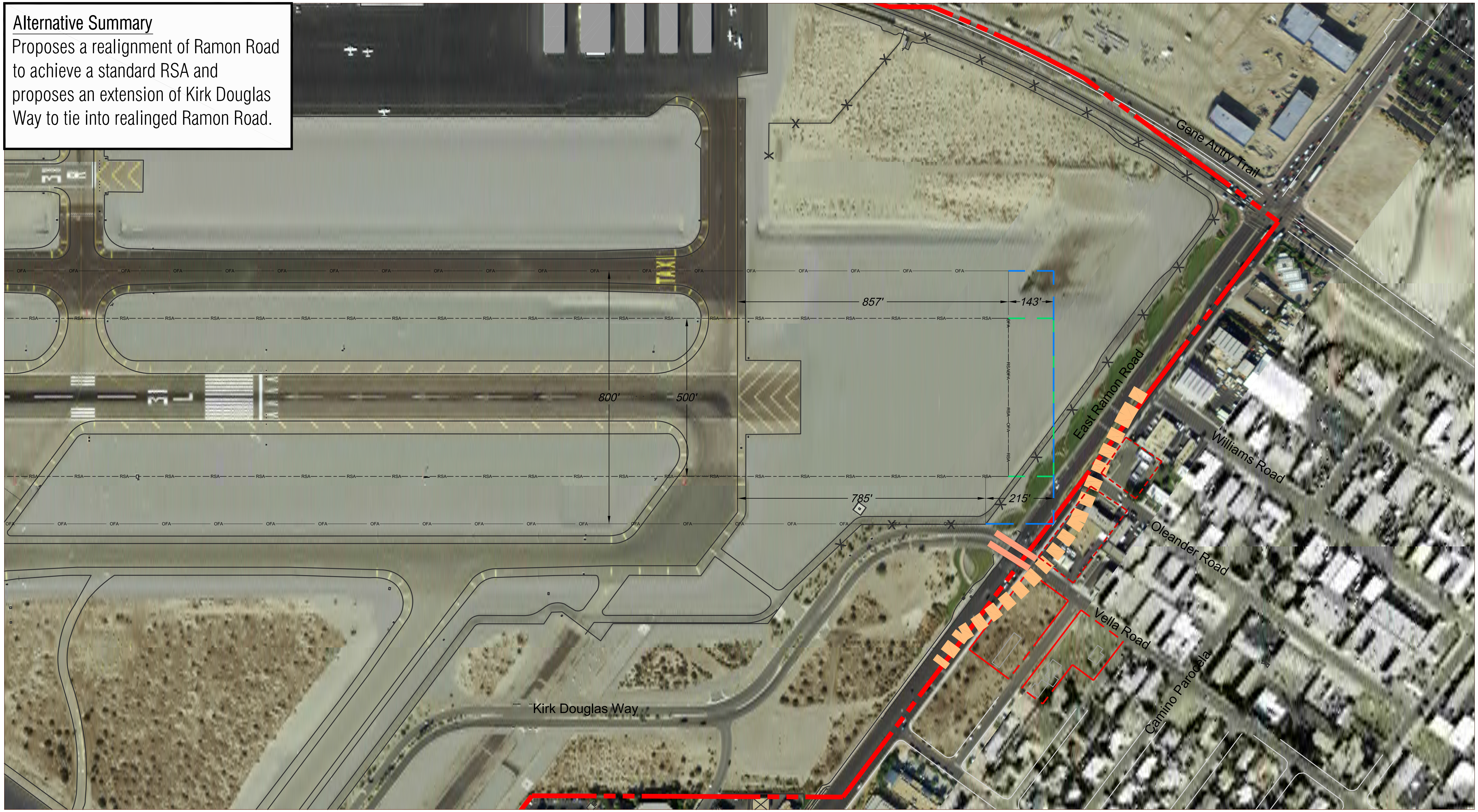
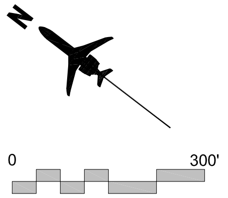
Alternative Summary

Proposes a realignment of Ramon Road to achieve a standard RSA and proposes an extension of Kirk Douglas Way to tie into realinged Ramon Road.



Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE



- Airport Property Line
- Existing Runway Object Free Area (OFA)
- Fully Extended Runway Object Free Area (OFA)
- Existing Runway Safety Area (RSA)
- Fully Extended Runway Safety Area (RSA)
- Potential East Ramon Alignment
- Potential Kirk Douglas Way Realignment
- Perimeter Fence
- Impacted Property

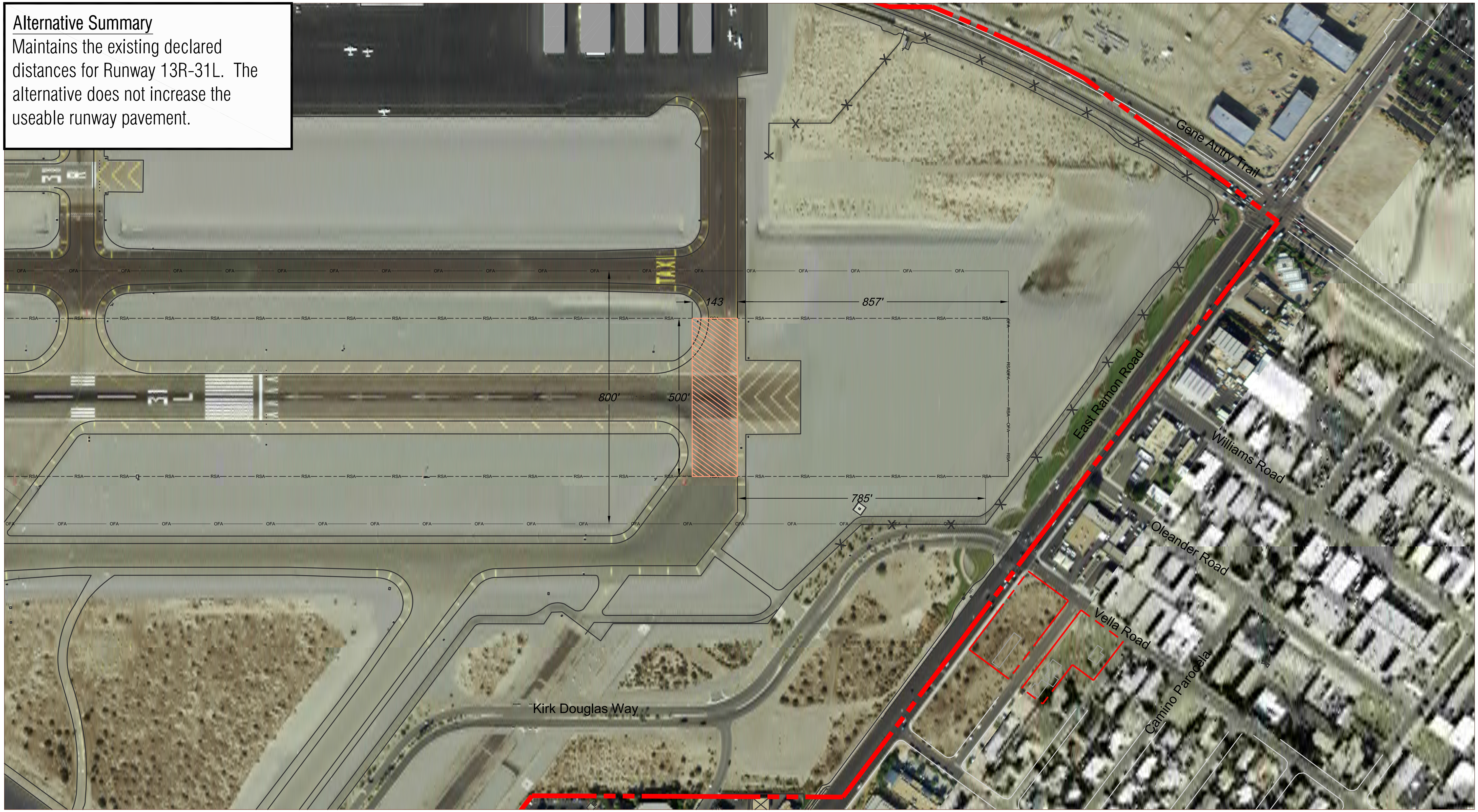
Alternative 3 - Runway Safety Area - Road Alignment

Figure 5-4

Palm Springs International Airport
Master Plan

5.4-4 Airside Alternative 4 – No-Project Alternative

The fourth and final alternative is a no-project alternative. The existing declared distances, as depicted in **Figure 5-5** would be maintained.



Alternative Summary

Maintains the existing declared distances for Runway 13R-31L. The alternative does not increase the useable runway pavement.

Source: HNTB Analysis

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PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

0 300'

- Airport Property Line
- Existing Runway Object Free Area (OFA)
- Existing Runway Safety Area (RSA)
- Perimeter Fence
- ▨ Unusable Runway Pavement for Runway 13R Arrivals

Alternative 4 - Runway Safety Area - No-Project

Figure 5-5

Palm Springs International Airport
Master Plan

5.4-5 Airside Alternative Evaluation and Recommendation

All of the above alternatives provide for a standard RSA. There are two sources for the evaluation of the RSA alternatives:

- FAA funding potential
- Feasibility
- Cost benefit analysis

RSA improvement programs are typically awarded priority funding by the FAA. Alternative 1 likely has the best chance of immediate funding by the FAA as it does not require any additional land to be acquired, nor does it require the relocation or tunneling of a busy arterial. From a general cost perspective, Alternatives 2 and 3 are expected to be more expensive than Alternative 1 to implement due to their construction costs and potential for requiring property acquisition.

Alternative 1 is preferred to Alternatives 2 and 3 from a feasibility and constructability perspective. Over 100 EMAS systems have been successfully installed at airports across the United States. The existing RSA at the south end of Runway 13R-31L already conforms to the FAA's RSA grading requirement. An EMAS installation would not be expected to require substantial site preparation as would be required with Alternative 2. The feasibility of tunneling East Ramon Road is dependent on a number of geotechnical factors. Both Alternatives 2 and 3 would disrupt traffic conditions in surrounding areas and would require complex phasing plans.

It is recommended that an EMAS be implemented at the south end of Runway 13R-13L to provide a standard RSA. This resolution is superior to the current declared distances because it allows for the use of 100% of the available runway pavement for take-off distance calculations and minimizes the factors pilots must account for in determining aircraft performance at PSP. Further analysis could include a cost-benefit study to determine the costs of payload restrictions due to the shorter available runway take-off distances allowed with declared distances in place at PSP.

5.5 TERMINAL ALTERNATIVES DEVELOPMENT

The Facility Requirements highlights considerable current and future deficiencies within the passenger terminal complex. **Table 5-1** presents a summary of the terminal facility requirements through 2028. Terminal alternatives are intended to meet the 2028 terminal facility requirements and address deficiencies in baggage claim, ticketing, security, outbound baggage, inbound baggage, and circulation. The facility requirements determined that additional gates may be required towards the end of the planning horizon. The full-build alternatives presented in this section depict where concourse expansion could potentially occur.

Terminal facility requirements indicate improvements are needed in the following areas, based on the time at which deficiencies appear in the planning horizon.

- 2008
    - Ticketing (queuing)
    - Baggage Transfer (inbound and outbound baggage)
    - Baggage Claim (baggage claim frontage, baggage service office)
    - Restrooms
    - Mechanical / Electrical / Maintenance / Storage
- 2013
    - Ticketing (ticket counter area, ticketing circulation)
    - Passenger Security Screening (screening area)
    - Baggage Claim (baggage claim devices, baggage claim circulation area)
- 2018
    - Ticketing (ticket counter length)
    - Passenger Security Screening (checkpoint lanes)
    - Baggage Transfer (EDS in-line baggage screening area)

Table 5-1: Terminal Facility Requirements Summary

	Existing	**2008**	**2013**	**2018**	**2023**	**2028**
Gates	16	16	16	16	16	16
Ticketing	3	3	4	5	5	6
Ticket Counter Length (Lin. Feet)	248	206	244	278	319	363
Ticket Counter Area (Sq. Feet)	2,369	2,264	2,680	3,063	3,506	3,997
Ticket Counter Queuing (Sq. Feet)	2,384	4,116	4,872	5,568	6,374	7,268
Ticketing Circulation (Sq. Feet)	6,452	6,174	7,308	8,353	9,561	10,902
Airline Ticket Offices (Sq. Feet)	12,846	6,174	7,308	8,353	9,561	10,902
Passenger Security Screening						
Security Screening Checkpoint (lanes)	6	5	6	7	8	9
Security Screening Area (Sq. Feet)	7,354	6,500	7,800	9,100	10,400	11,700
Baggage Transfer						
Outbound Baggage Make-up (Sq. Feet)	7,404	11,874	14,055	16,064	18,387	20,967
Inbound Baggage (Sq. Feet)	2,339	8,959	10,604	12,120	13,872	15,819
EDS In-Line Baggage Screening (Square Feet)	7,303	5,988	7,088	8,101	9,273	10,574
Baggage Claim						
Baggage Claim Frontage (Lin. Feet)	675	779	922	1,054	1,206	1,376
Baggage Claim Devices	3	3	4	5	5	6
Baggage Service Office (Sq. Feet)	516	1,535	1,817	2,076	2,376	2,710
Baggage Claim Circulation (Sq. Feet)	9,834	9,815	11,619	13,279	15,199	17,332
Baggage Claim Total Area (Sq. Feet)	13,247	23,370	27,663	31,617	36,189	41,267
Public Area						
USO (Sq. Feet)	1,252	1,252	1,252	1,252	1,252	1,252
General Circulation (Sq. Feet)	24,325	11,611	14,338	16,388	18,757	21,390
Restrooms (Sq. Feet)	2,021	2,444	2,893	3,306	3,785	4,316
Concessions (Sq. Feet)	6,764	6,764	6,764	6,764	6,764	6,764
Non Public Area						
TSA Offices (Sq. Feet)	2,202	1,554	1,839	2,120	2,406	2,744
Airport Administration (Sq. Feet)	5,750	5,750	5,750	5,750	5,750	5,750
Airport Operations (Sq. Feet)	4,858	4,858	4,858	4,858	4,858	4,858
Other						
Mech/Elec/Maint/Storage (Sq. Feet)	7,529	15,271	17,738	19,953	22,515	25,361
Total Processor Area (Sq. Feet)	116,399	124,923	144,811	162,712	183,211	205,831
Total Processor Area Deficiency (Sq. Feet)		8,542	28,412	46,313	66,812	89,432

Source: HNTB Analysis

The alternatives development process began with an analysis of opportunities and constraints for development in order to understand where expansion is possible. Limitations of expansion due to landside and airside facilities resulted in the development of two main expansion themes: an expansion of facilities that maintains the Passenger Terminal complex's symmetrical axis, and an expansion of terminal facilities to the south. Substantial expansion of facilities to the north and west was ruled out because of the existing airport development in those areas. Relocating the terminal facilities to the east side of the airport was also ruled out due to the high cost and unnecessary duplication of facilities. The first iteration of terminal alternatives development resulted in the creation of four terminal alternatives.

5.5-1 Terminal Alternative 1 – No-Build Alternative

Alternative 1, as presented in **Figure 5-6**, is a no-build alternative where no additional terminal facilities are constructed. It is included as an alternative as a means to compare all project alternatives to a no-build alternative, which would be required in any subsequent Federal or State environmental analysis. Alternative 1 does not address any of the future terminal facility deficiencies determined in the facility requirements analysis. However, while no new structures or significant improvements to the existing structure are proposed, slight changes can be made to increase the passenger throughput rate and maintain the existing space for terminal functions. For example, the configuration of the checkpoint lanes in the passenger security screening checkpoint area could be modified or additional self-service ticket kiosks could be placed outside the passenger ticketing lobby near the curbside as a means to improve passenger throughput. However, to meet long-term requirements and maintain PSP's high customer convenience levels, more substantial changes are required. Three additional alternatives propose substantial developments that address near-term (2008 – 2018) and long-term (2019 – 2028) terminal requirements.

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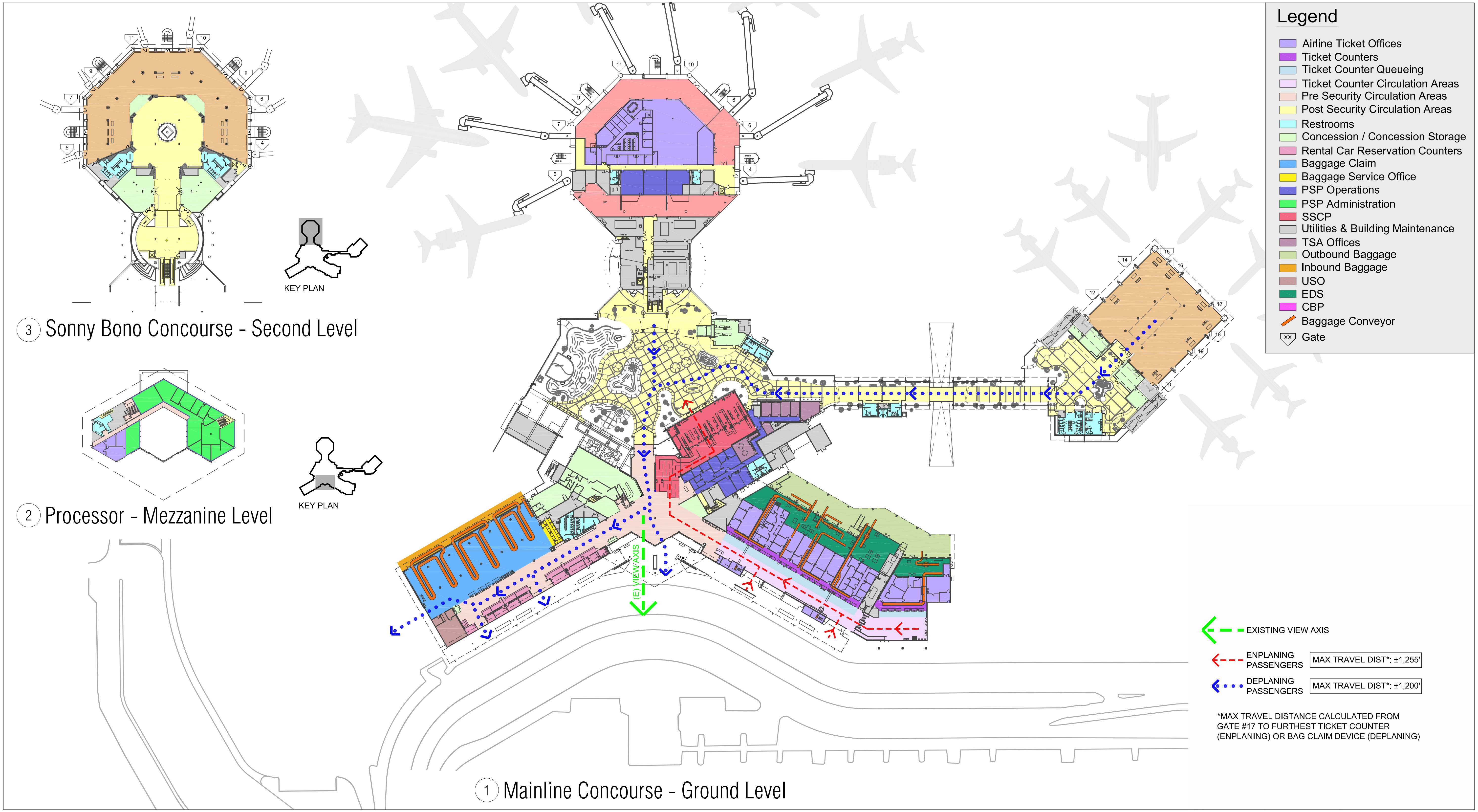

3 Sonny Bono Concourse - Second Level
KEY PLAN
2 Processor - Mezzanine Level
KEY PLAN
1 Mainline Concourse - Ground Level
(E) VIEW AXIS
Legend
Airline Ticket Offices
Ticket Counters
Ticket Counter Queueing
Ticket Counter Circulation Areas
Pre Security Circulation Areas
Post Security Circulation Areas
Restrooms
Concession / Concession Storage
Rental Car Reservation Counters
Baggage Claim
Baggage Service Office
PSP Operations
PSP Administration
SSCP
Utilities & Building Maintenance
TSA Offices
Outbound Baggage
Inbound Baggage
USO
EDS
CBP
Baggage Conveyor
XX Gate
EXISTING VIEW AXIS
ENPLANING PASSENGERS
MAX TRAVEL DIST*: ±1,255'
DEPLANING PASSENGERS
MAX TRAVEL DIST*: ±1,200'
*MAX TRAVEL DISTANCE CALCULATED FROM GATE #17 TO FURTHEST TICKET COUNTER (ENPLANING) OR BAG CLAIM DEVICE (DEPLANING)
N
0
120'

Terminal Alternative 1 - No-Build (Existing Conditions)

Figure 5-6

Palm Springs International Airport
Master Plan

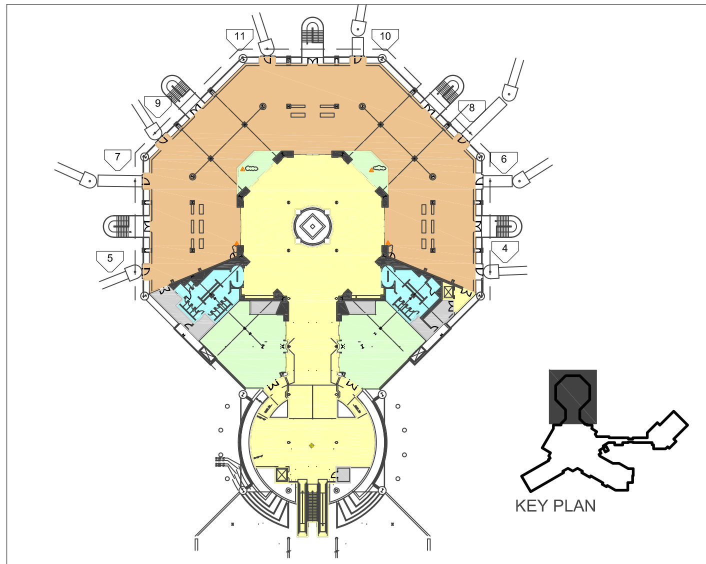
PALM SPRINGS INTERNATIONAL AIRPORT

5.5-2 Terminal Alternative 2 – Hybrid Processor

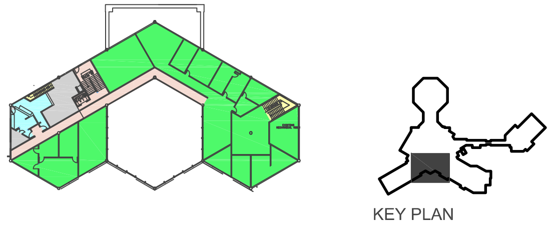
Alternative 2, known as the Hybrid Processor and depicted in **Figure 5-7**, is a significant departure from the existing terminal layout and passenger flow pattern. It is called the hybrid because it maintains the existing axis and proposes the utilization of a new axis shifted to the south. Alternative 2 proposes the following terminal improvement changes.

- The ticketing lobby is maintained in its current location, but expanded approximately 100 feet south.
- New facilities behind the ticket counters house the in-line EDS for baggage screening.
- The ATO is reconfigured to accommodate the ticket lobby redesign.
- A new five-carousel baggage claim facility is constructed south of the ticketing lobby.
- The existing baggage claim area can potentially be used for Customs and Border Protection services for international flights.
- The passenger security screening queue area is expanded. In addition, the number of checkpoint lanes is increased from 6 to 8 lanes.
- A new subterranean outbound and inbound baggage make-up area is located adjacent to the baggage screening area.
- A passenger connection is constructed from the Regional Concourse to the new baggage claim areas to allow separation of arriving and departing passenger traffic flows.

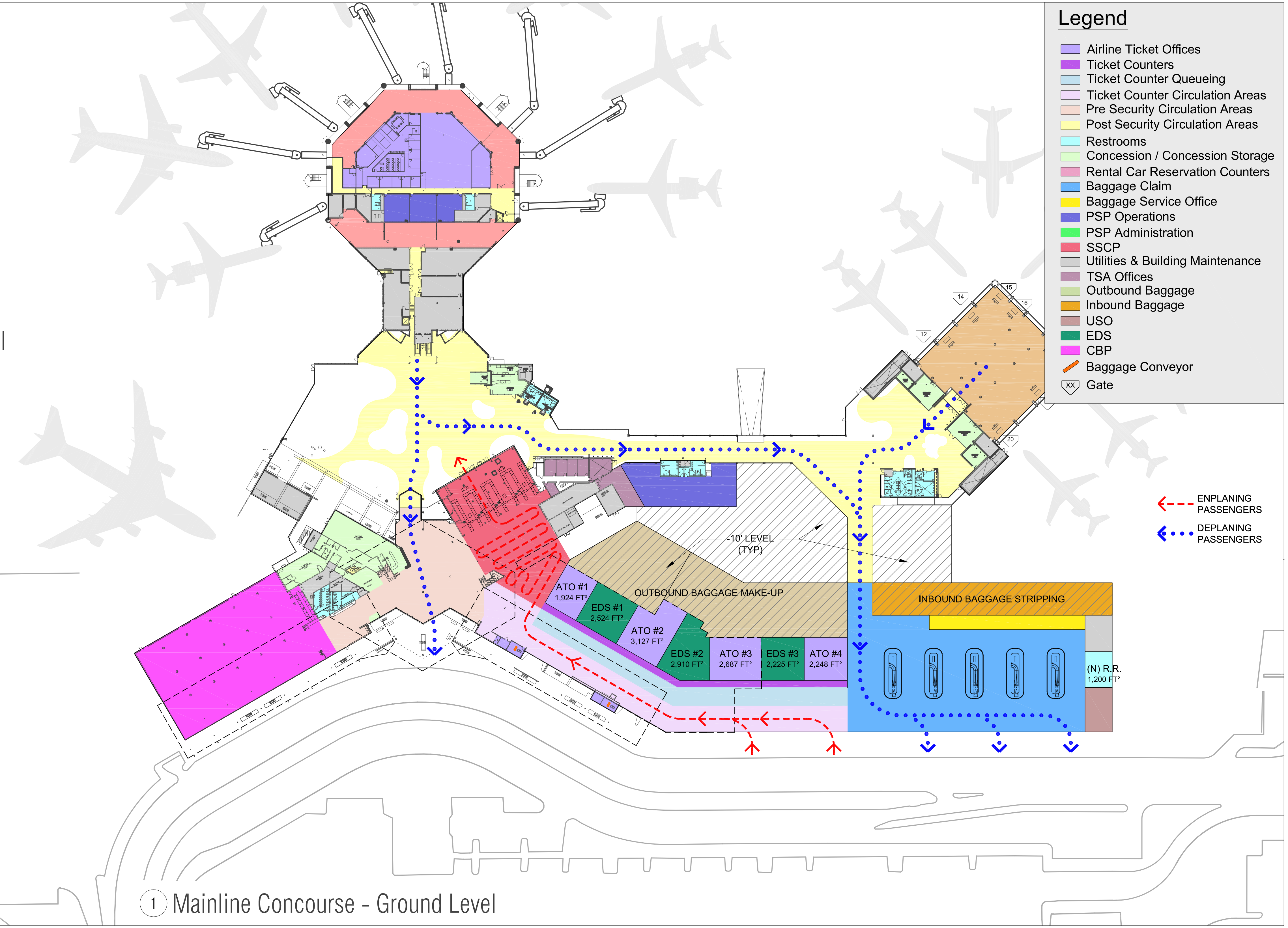
Alternative 2, while it meets the near-term (2008 – 2018) facility requirements, it does not meet the long-term 2028 terminal facility requirements. It fails to adequately address circulation and queuing in the ticketing lobby and fails to provide enough carousels and circulation space in the baggage claim area.



③ Sonny Bono Concourse - Second Level



② Processor - Mezzanine Level



Legend

- Airline Ticket Offices
- Ticket Counters
- Ticket Counter Queueing
- Ticket Counter Circulation Areas
- Pre Security Circulation Areas
- Post Security Circulation Areas
- Restrooms
- Concession / Concession Storage
- Rental Car Reservation Counters
- Baggage Claim
- Baggage Service Office
- PSP Operations
- PSP Administration
- SSCP
- Utilities & Building Maintenance
- TSA Offices
- Outbound Baggage
- Inbound Baggage
- USO
- EDS
- CBP
- Baggage Conveyor
- Gate

① Mainline Concourse - Ground Level

PALM SPRINGS INTERNATIONAL AIRPORT

N

0 120'

Terminal Alternative 2 - Hybrid Processor

Figure 5-7

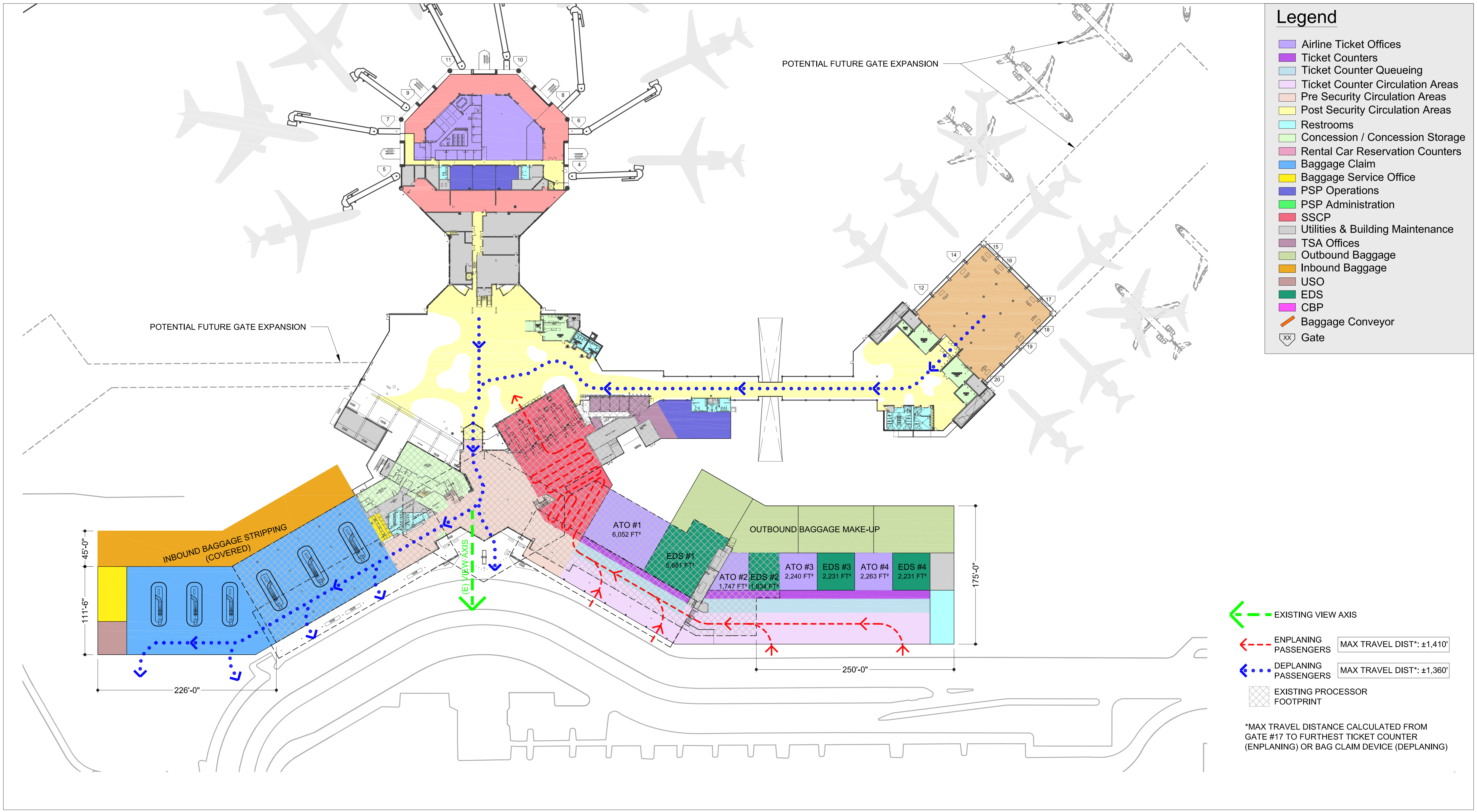
Palm Springs International Airport
Master Plan

5.5-3 Terminal Alternative 3 – Expand-in-Place Alternative

Alternative 3, as depicted in **Figure 5-8**, is an expand-in-place alternative that maintains the Airport's existing symmetry axis. Alternative 3 was developed to meet the 2028 terminal facility requirements. Alternative 3 proposes the following terminal improvement changes.

- The baggage claim area is expanded to the north by approximately 225 feet and replaces the three existing baggage claim belts with six carousels, which individually have a greater baggage capacity. This expansion will increase the walking distance of patrons to public parking facilities.
- The baggage service office is expanded to better serve the high volume of oversized checked baggage.
- The rental car reservation counters and associated offices are removed from the baggage claim area.
- The ticketing lobby is expanded to the south by approximately 250 feet. The west façade is reconstructed and pushed approximately 21 feet outwards, principally to enhance queue and circulation space. Ticket counter length is extended to accommodate a wider range of growth scenarios.
- New facilities behind the ticketing counters house the in-line Explosive Detection System (EDS) for baggage screening
- Airline Ticket Offices (ATO) are reconfigured to accommodate the ticket lobby redesign.
- The passenger security screening area is expanded to increase the number of checkpoint lanes to 8 and increase the queue area. It is deficient by 1 lane to meet the 2028 requirement.

The expand-in-place alternative increases the distance between the ends of the ticketing and baggage claim halls, but maintains the overall terminal symmetry along the view corridor axis. It also maintains the flow pattern of passengers while increasing circulation space. Finally, it preserves opportunity for future expansion to the north or the south. Alternative 3 does not propose constructing additional gates within the planning horizon. However, it does not preclude future gate development at the airport. Implementation of Alternative 3 will require more detailed analysis of the existing structure to validate the structural feasibility of ticketing expansion. It also requires a change in the floor elevation in the middle of the ticketing lobby.



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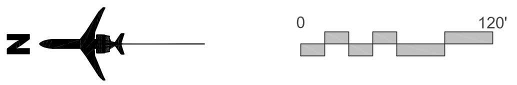

Terminal Alternative 3 - Expand-in-Place

Figure 5-8

Palm Springs International Airport
Master Plan

5.5-4 Terminal Alternative 4 – New Processor

Alternative 4 - New Processor, is a significant departure from the existing terminal layout and flow pattern. Alternative 4 proposes the following terminal improvement changes.

- The ticketing lobby is constructed south of the existing ticketing, ATO, and EDS areas to provide additional queuing and circulation area. This requires the demolition of the existing Allegiant / WestJet ticketing lobby and will allow for the resolution of the floor level change that is not dealt with in Alternatives 2 and 3.
- The in-line EDS and ATO areas are consolidated to maximize their operations efficiency.
- New inbound and outbound baggage make up areas are constructed.
- A new six-carousel baggage claim area is constructed south of the expanded ticketing lobby.
- The passenger security screening area is expanded. In addition, the number of checkpoint lanes is increased from 6 to 9 lanes.
- The U.S. Customs and Border Protection facility is relocated and expanded and would replace the existing baggage claim area.
- Three of the commuter terminal gates are realigned.
- The existing vehicle inspection plaza may need to be relocated.

Several different subsets of Alternative 4 - New Processor, were hypothesized during a design charrette. All of the subsets provided different passenger flow patterns and location of facilities. Based on facility sizing criteria, the ease of phasing, and balance with landside facilities, only one New Processor Alternative was carried forward. Alternative 4 is depicted in **Figure 5-9**.

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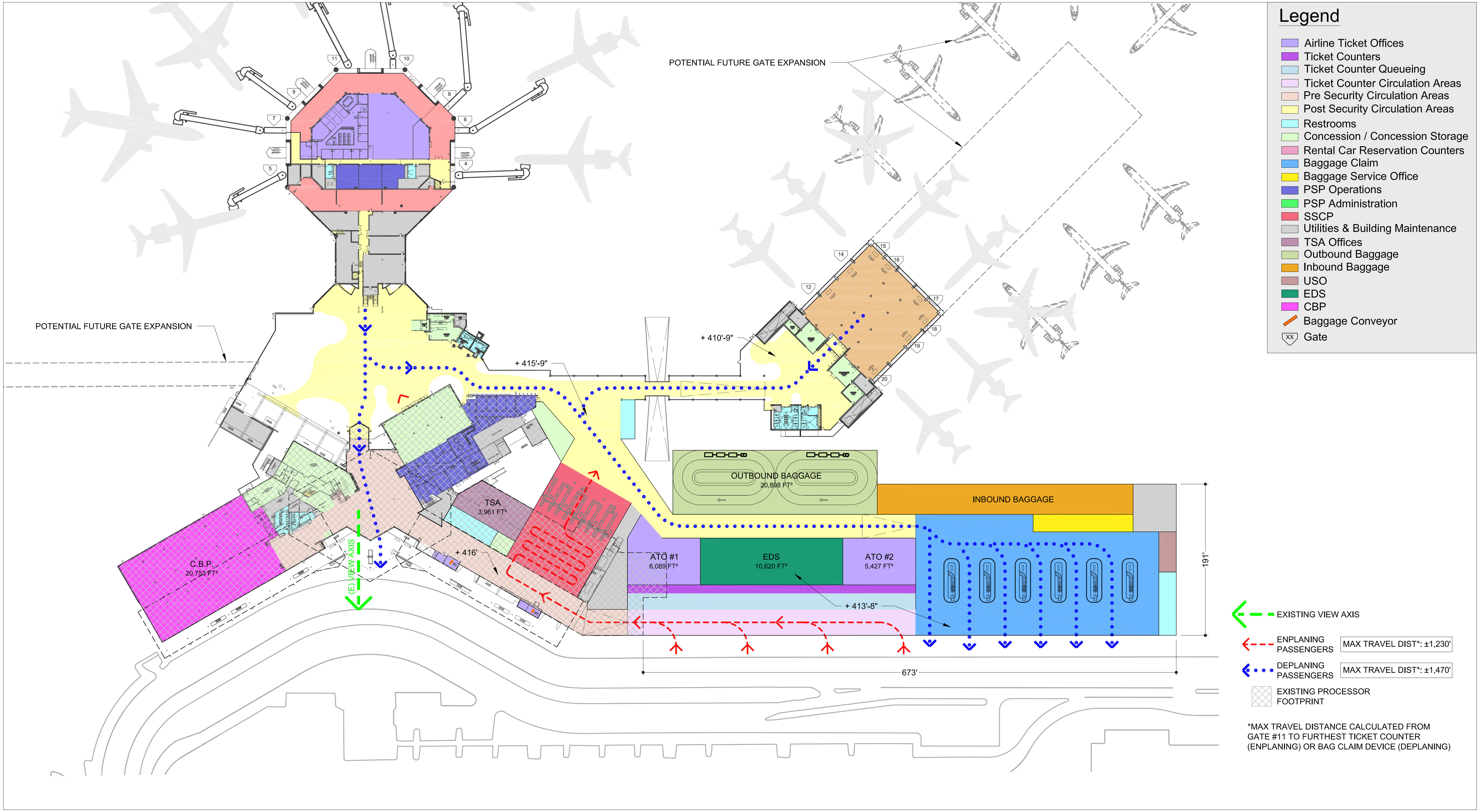


PALM SPRINGS INTERNATIONAL AIRPORT

N

0 120'

Terminal Alternative 4 - New Processor

Figure 5-9

Palm Springs International Airport
Master Plan

5.5-5 Refinement of Initial Terminal Alternatives

Feedback from Airport Staff and vigorous analysis conducted during two design charrettes resulted in the refinement of the terminal alternatives discussed above. Alternative 2 - Hybrid Processor, did not adequately meet the facility requirements and was removed from further consideration. The Hybrid Processor fails to provide sufficient ticketing and baggage claim area space for a full-build alternative meeting requirements through 2028. To replace Alternative 2 - the Planning Team developed a new alternative known as the Immediate Action Plan.

The Immediate Action Plan provides a lower-cost alternative that would resolve some of the most pressing needs within the PSP terminal. It was developed in light of the recent economic recession to provide potential low cost, short term improvements because of the challenges facing the airport and airport tenants including airlines. The alternative maintains the existing terminal symmetry and moderately expands both the baggage claim and ticketing areas in their current location. The Immediate Action Plan, as depicted in **Figure 5-10**, is intended to be a near-term alternative, but it meets some of the long-term (2018 – 2028) requirements as well. It allows for a modular expansion process that is compatible with the option to develop either a full Expand-in-Place Alternative or the New Processor Alternative. Specifically, the Immediate Action Plan proposes the following terminal improvement changes.

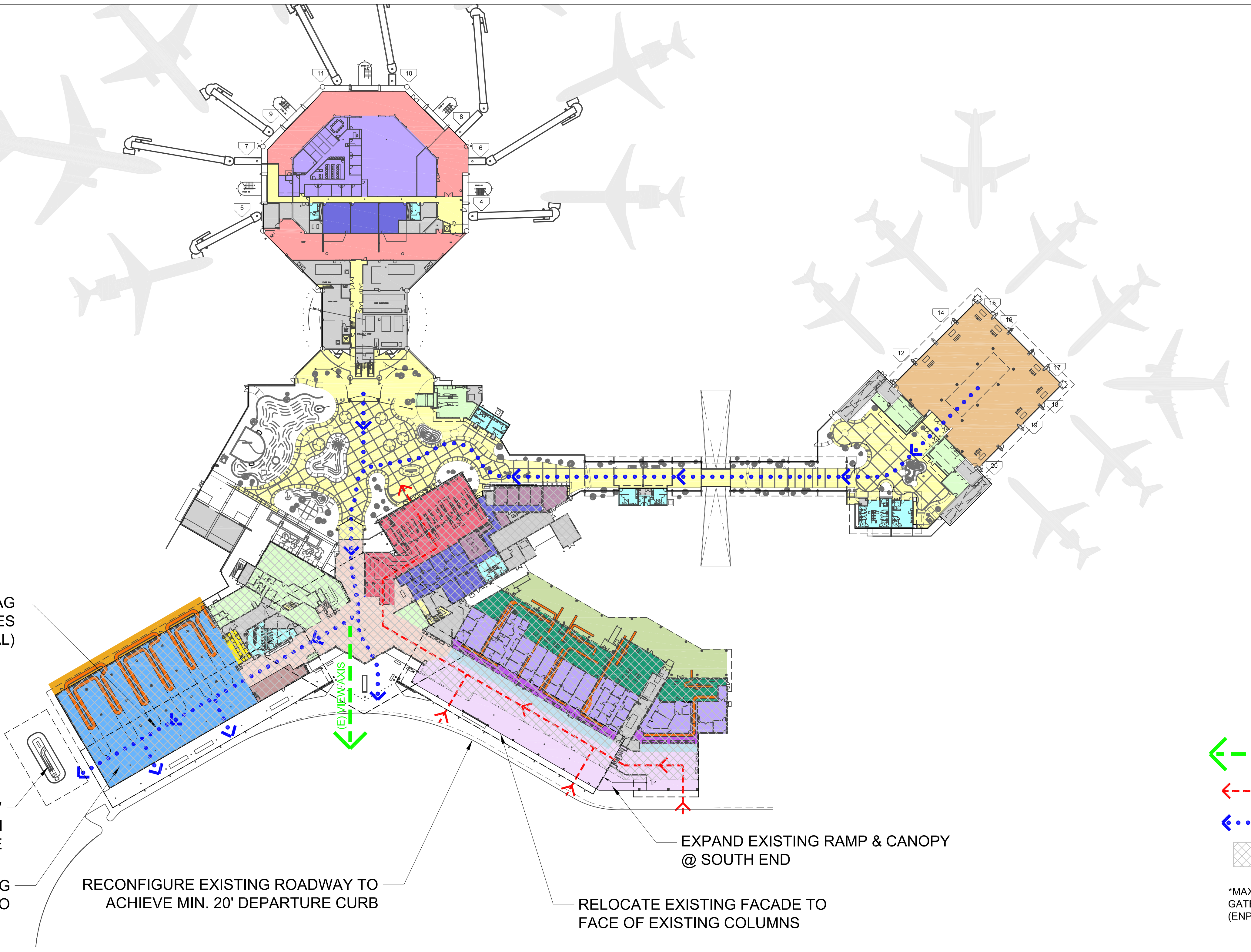
- Rental car reservation counters currently located inside the baggage claim would be relocated out of the terminal building.
- The existing baggage claim devices would be extended to provide an additional 450 linear feet of frontage. This is the preferred option.
- An additional baggage claim carousel would be constructed in a sprung structure adjacent to the existing baggage claim. This is a secondary option.

The concept of creating an exterior sprung structure to accommodate another baggage claim carousel could also be an actual extension of the building. This addition could then either serves as a new carousel or house all rental car counters and offices in the short term and allow for the primary carousels to be extended. Once the long-term permanent structure is completed, the rental car counters and offices would be relocated.

The existing façade of the ticketing lobby could be pushed westward towards the terminal curbside to provide additional queuing space and circulation (optional).

The replaced Alternative 2 - Immediate Action Plan, addresses several of the most critical near-term terminal area deficiencies. It would improve baggage claim capacity and level of service by relocating rental car customer service counters, add additional footage to baggage claim devices, and improve ticketing queuing and level of service by widening the existing ticketing area. However, based on forecast activity, the alternative would not meet the required capacity beyond 2018.

Finally, the implementation of Alternative 2 would require additional detailed analysis of the existing structure to validate the structural feasibility of a potential ticketing expansion. This is partly a result of the modern seismic requirements included in the most recent changes to the California Building Code and partly a result of tying multiple previous expansions together with another expansion. Additional analysis is recommended to determine if limited expansion could meet the appropriate requirements of the California Building Code without triggering a seismic upgrade of the existing structure.



EXTEND EXISTING BAG
CLAIM DEVICES
(450 L.F. ADDITIONAL)

PROPOSED OVERFLOW
BAG CLAIM DEVICE IN
SPRUNG STRUCTURE

RELOCATE EXISTING
RENTAL CAR & USO

RECONFIGURE EXISTING ROADWAY TO
ACHIEVE MIN. 20' DEPARTURE CURB

RELOCATE EXISTING FACADE TO
FACE OF EXISTING COLUMNS

EXPAND EXISTING RAMP & CANOPY
@ SOUTH END

Legend

- 🟪 Airline Ticket Offices
- 🟪 Ticket Counters
- 🟦 Ticket Counter Queueing
- 🟪 Ticket Counter Circulation Areas
- 🟫 Pre Security Circulation Areas
- 🟨 Post Security Circulation Areas
- 🟦 Restrooms
- 🟩 Concession / Concession Storage
- 🟥 Rental Car Reservation Counters
- 🟦 Baggage Claim
- 🟨 Baggage Service Office
- 🟦 PSP Operations
- 🟩 PSP Administration
- 🟥 SSCP
- ⬜ Utilities & Building Maintenance
- 🟪 TSA Offices
- 🟩 Outbound Baggage
- 🟧 Inbound Baggage
- 🟫 USO
- 🟩 EDS
- 🟪 CBP
- Baggage Conveyor
- XX Gate

EXISTING VIEW AXIS

ENPLANING PASSENGERS — MAX TRAVEL DIST*: ±1,282'

DEPLANING PASSENGERS — MAX TRAVEL DIST*: ±1,200'

▨ EXISTING PROCESSOR FOOTPRINT

*MAX TRAVEL DISTANCE CALCULATED FROM GATE #17 TO FURTHEST TICKET COUNTER (ENPLANING) OR BAG CLAIM DEVICE (DEPLANING)

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PALM SPRINGS INTERNATIONAL AIRPORT

N

0 120'

Terminal Alternative 2 - Immediate Action Plan (NEW)

Figure 5-10

Palm Springs International Airport
Master Plan

Chapter 6: Alternatives Evaluation

6.1 INTRODUCTION

The purpose of this Chapter is to document and describe the evaluation of the master plan alternatives and the selection process for the Master Plan recommended alternative.

The recommended alternative is selected by Airport Staff and the Airport Commission based on the following criteria:

- Cost and financial feasibility documented in this chapter,
- Technical evaluation documented in this chapter,
- Input received from the Master Plan Technical Committee, and
- Input received from members of the public that commented at two public meetings or in writing.

The recommended alternative was presented to the full Airport Commission on Wednesday, January 13, 2010 for consideration and approval, as noted.

ACTION: Receive draft Airport Master Plan Study as developed and recommended that staff proceed with the Environmental Report phase of the program. Motion Commissioner Doria, presumed seconded by Vice Chairman Hoehn and unanimously carried.

Once the Airport Commission approved the alternative for the Master Plan it will be subjected to environmental analysis per the California Environmental Quality Act (CEQA) guidelines. The Master Plan will remain in draft format and will not reflect official policy until the environmental analysis is concluded and the City of Palm Springs City Council approves the final CEQA analysis and adopts the Airport Master Plan as the official development plan for the airport.

6.2 MASTER PLAN ALTERNATIVES

A total of four alternatives were evaluated for consideration and recommendation. Presented in detail in Chapter 5, they are summarized below:

- Alternative 1 - No-Build - This alternative will be carried forward in the evaluation but has no upfront implementation costs associated with it.
- Alternative 2 - Immediate Action Plan – This alternative is intended to resolve the existing and near-term constraints in the terminal and rental car facilities. It does not meet the long term facility requirements and will be evaluated based on different criteria than the other build alternatives.
- Alternative 3 - Expand-in-Place – This alternative would expand the existing terminal facilities in their existing location expanding bag-claim north and ticketing south in addition to providing landside improvements.

- Alternative 4 - New Processor – This alternative would result in the construction of a new terminal processor south of the existing ticketing lobby with new bag-claim and ticketing facilities in addition to landside improvements.

6.3 ROUGH ORDER OF MAGNITUDE COST ESTIMATES

Rough Order of Magnitude (ROM) cost estimates were prepared for each of the three “build” or master plan development alternatives for Palm Springs International Airport. Each alternative presents an opportunity to construct facilities which meet the airport facility requirements through 2028 as defined during the Airport Master Plan process.

This chapter provides a basis for determining the relative cost of making the improvements in each of the development alternatives. This includes the cost of demolishing, constructing, or relocating facilities included in a given alternative.

Demolition, construction, and relocation unit costs were developed based on the Consultant Team’s expertise with recent project unit costs at other airports within the greater Southern California region. Unit costs, in October 2009 dollars, include the cost of materials (e.g. steel, concrete, asphalt, construction equipment etc…) and labor (to design and build the project) and are estimated based on the best available data.

Unit cost considerations include the type of facility (its function), complexity of construction, and desired level of service. The type of facility determines unit costs in that some functional areas are more costly to build than others. For instance, the same size facility for a terminal serving passenger processing functions would be more costly to build than for a cargo processing facility. The complexity of construction (e.g. phasing complications, extent of utility improvements, etc…) is also factored into the unit costs. Passenger screening areas contain complex processing systems and are more costly to design and construct relative to passenger holdrooms. Finally, the desired level of service may result in different unit costs for facilities with similar functions. The existing facilities at PSP are constructed to a relatively high level of service offering amenities that are above average relative to similarly sized airports. Maintaining PSP’s high level of service may increase the cost of constructing future improvements. The unit costs used for PSP are presented in **Table 6-1**. The costs were calculated by applying the unit costs to the size of each facility, determined using gross area measurements or quantities (e.g. number of baggage claim devices (where applicable)) for each functional component.

Table 6-1: Unit Costs for PSP

BUILDING INFRASTRUCTURE COMPONENT	UNIT PRICE	UNIT
Demolish facility components	$2 to $20	Sq. Feet
Construct minor terminal improvements (structural and non-structural)	$7 to $35	Sq. Feet
Install terminal canopy / roofing	$45 to $70	Sq. Feet
Construct airport operations office areas and counters	$85 to $90	Sq. Feet
Construct terminal non-public areas	$85 to $90	Sq. Feet
Renovate terminal public areas	$115 to $145	Sq. Feet
Construct new building areas	$175 to $250	Sq. Feet
Construct rental car fueling and wash facilities	$60	Sq. Feet
Demolish / Construct CNG station	$400,000	Total
LANDSIDE INFRASTRUCTURE COMPONENT	**UNIT PRICE**	**UNIT**
Demolish pavement areas (concrete or asphalt)	$6	Sq. Feet
Construct non-public surface parking lot (asphalt pavement)	$8	Sq. Feet
Construct public and rental car surface parking lot (asphalt pavement and landscaping)	$10	Sq. Feet
Construct parking garage (concrete)	$43	Sq. Feet
Construct pavement areas (concrete)	$50	Sq. Feet
Construct terminal curbside (concrete)	$60	Sq. Feet
Construct pedestrian connector	$15,000	Linear Feet
Construct utilities tunnel	$2,750	Linear Feet
TERMINAL EQUIPMENT COMPONENT	**UNIT PRICE**	**UNIT**
Extend existing bag claim devices	$3,500	Linear Feet
Demolish existing bag claim devices	$7,500	Each
Install baggage claim devices , 56' long each	$250,000	Each
Install baggage make-up devices, 56' long each	$200,000	Each
Install baggage make-up devices, 80' long each	$400,000	Each
Install SSCP security devices	$40,000	Each
Install inbound baggage stripping conveyor	$2,500	Linear Feet
Install outbound baggage take-off belts	$3,000	Linear Feet

Source: HNTB Corporation
Note: Unit costs presented in 2009 dollars

In addition to the unit costs (materials and labor) of demolishing, constructing, and relocating facilities, total ROM costs also factor in soft costs. Soft costs are typically composed of:

- Planning Costs – The cost associated with concept planning and preliminary layout, environmental analysis, and scheduling
- Program Management Costs – The costs associated with management and execution of the contract by the airport, consultant team, and the program manager, legal, testing and inspection, and other costs
- Design and Engineering Costs – The costs associated with the design and engineering fees to get the project documents from concept to bid and award. The costs also include costs associated with design and engineering support during construction and close out of a project

- Construction Management Costs – Costs associated with the management of the general contractors
- Other Costs – The costs of permits, OCIP, and artwork

Soft costs are generally calculated based on a percentage of the unit costs. The unit costs and the soft costs are added together and a contingency factor applied as a percentage of the unit and general conditions cost.

Contingency costs account for preliminary drawings / documentation during the design phase and for design changes during the construction phase of the project.

For PSP, the ROM costs were not escalated to determine the costs in future year dollars.

Program management costs (costs associated with management, design, architecture, engineering and related costs) were also not factored in the total costs.

All costs are presented in 2009 dollars. The total project estimated cost of each alternative is calculated in the following manner:

Construction Costs
+ Soft Costs
+Contingency
=Project Costs

For this Master Plan Update, only terminal and landside alternative improvements were considered. With regards to airfield alternatives, despite their differences in terminal and landside development, all of the alternatives propose the addition of an Engineered Materials Arrestor System (EMAS) at the south end of Runway 13R-31L. Implementation costs of the EMAS are shown separately and the proposed action can be considered independently from the alternatives evaluation.

6.3-1 EMAS Implementation Cost Estimate

Implementation of an EMAS is assumed for all alternatives. EMAS unit costs include $14 per square feet for site preparation and $78 per square feet for the EMAS bed. In a space of 34,000 square feet and a 30,000 square feet bed, the total cost in 2009 dollars is $2,816,000. Factoring in a discount rate of 6%, a lifespan of 10 years, and maintenance every 10 years, the life cycle cost total approximately $4,650,000. The costs are displayed in **Table 6-2**.

Table 6-2: EMAS Implementation Cost Estimate

PROJECT COMPONENT	UNIT COST		AREA	TOTAL COSTS
Site Preparation	$14	/sqft	34,000	$476,000
EMAS Bed	$78	/sqft	30,000	$2,340,000
EMAS Total Installation				**$2,816,000**
Discount Rate	0.06			
Life Cycle	20			
Replacement	10			
Maintenance /yr.	50,000			
PV Replace				**$1,306,644**
Maint. 0-9 years				**$340,085**
Maint 11-19				**$189,901**
Life Cycle Cost				**$4,652,630**

Source: HNTB Corporation
Note: Unit costs presented in 2009 dollars

6.3-2 Terminal and Landside Cost Estimates

The cost estimates for each of the three development alternatives are presented below in **Tables 6-3**, **6-4**, and **6-5**. Costs are listed by the demolition, construction, or relocation action for each development alternative.

For the purposes of estimating costs, it is assumed that Alternative 2 would be developed in the near term while Alternatives 3 or 4 would be developed in the long term. Therefore, the costs of developing Alternatives 3 and 4 would also require the implementation of Alternative 2.

Table 6-3: Alternative 2 - Rough Order Magnitude Cost Estimates

PROJECT COMPONENT	TOTAL COSTS
Environmental Documentation and Phasing	$ 500,000
Advanced Planning and Design	$ 500,000
Construct new Commercial Vehicle Hold Lot	$ 784,553
Construct new Rental Car Maintenance and Storage Area	$ 3,616,421
Construct new Employee Parking Lot	$ 145,180
Construct new Rental Car Quick-Turnaround-Area (QTA)	$ 2,946,073
Expand Public Parking Facilities	$ 2,236,933
Close East Baristo Way Entrance	$ -
Demolish old Rental Car QTA & Maintenance Facilities & Prepare for Holiday Economy Parking	$ 434,837
Construct temporary Customs and Border Protection (CBP) Facility	$ 653,310
Relocate Rental Car Customer Service Center (CSC) (reservations area)	$ 1,432,129
Demolish old Signature Hangar and CBP Facility	$ 195,340
Construct new Rental Car Ready / Return (R/R) Lot	$ 945,122
Remodel Ticketing Wing of Terminal	$ 2,274,673
Remodel Baggage Claim Wing of Terminal	$ 2,786,027
Construct Auxiliary Parking Lot	$ 1,097,561
Note: Cost estimates assume a maximum reuse of existing facilities.	**$ 19,548,159**
Note: Cost estimates are calculated in October 2009 dollars.	

Table 6-4: Alternative 3 - Rough Order Magnitude Cost Estimates

PROJECT COMPONENT	TOTAL COSTS
Construct new Compressed Natural Gas (CNG) Station	$ 595,360
Demolish existing Compressed Natural Gas (CNG) Station	$ 595,360
Expand Rental Car Quick-Turnaround-Area (QTA)	$ 436,739
Construct Customs and Border Protection (CBP) Facility	$ 3,348,900
Demolish existing Rental Car Ready / Return (R/R) Lot	$ 1,498,744
Construct new Rental Car Ready / Return Multi-Level Garage	$ 19,376,363
Prepare Existing Ticketing Wing of Terminal	$ 4,961,558
Expand Ticketing Wing of Terminal	$ 8,853,849
Remodel and Expand Baggage Claim Wing of Terminal	$ 12,781,601
Remodel Outbound Baggage Make-Up Area of Terminal	$ 7,207,891
Expand Existing Security Screening Checkpoint (SSCP)	$ 1,766,351
Relocate TSA and PSP Operations	$ 1,344,264
Construct Utilities Tunnel	$ 821,700
Note: Cost estimates assume a maximum reuse of existing facilities.	**$ 63,588,681**
Note: Cost estimates are calculated in October 2009 dollars.	

Table 6-5: Alternative 4 - Rough Order Magnitude Cost Estimates

PROJECT COMPONENT	TOTAL COSTS
Demolish Cell Phone Lot	$ 65,638
Construct new Rental Car Customer Service Center (CSC) (reservations area)	$ 1,453,423
Construct new Rental Car Ready / Return Lot	$ 1,732,126
Relocate Employee Parking Lot	$ 74,420
Construct new Compressed Natural Gas (CNG) Station	$ 595,360
Demolish Vehicle Inspection Plaza	$ 100,914
Realign Airport Loop Road	$ 5,753,249
Demolish existing Compressed Natural Gas (CNG) Station	$ 595,360
Expand Rental Car Quick-Turnaround-Area (QTA)	$ 384,872
Expand Public Parking Facilities	$ 4,198,479
Construct New Processor	$ 51,921,639
Remodel Baggage Claim Wing of Terminal	$ 3,310,353
Reconfigure Terminal Curbside	$ 2,227,242
Relocate Security Screening Checkpoint (SSCP)	$ 4,438,305
Remodel Existing Ticketing Wing of Terminal	$ 1,304,996
Note: Cost estimates assume a maximum reuse of existing facilities.	**$ 80,005,199**
Note: Cost estimates are calculated in October 2009 dollars.	

In October 2009 dollars, the total cost of Alternative 2 - Immediate Action Plan is $19,548,159.

In October 2009 dollars, the total cost of Alternative 3 - Expand-in-Place Plan is $63,588,681, and excludes the implementation costs of Alternative 2.

In October 2009 dollars, the total cost of Alternative 4 - New Processor Plan is $80,005,199, and excludes the implementation costs of Alternative 2.

The higher cost of Alternative 4, relative to Alternative 3, is driven primarily due to the additional terminal building square footage that would be constructed.

6.4 FINANCIAL FEASIBILITY

Goal No. 4 of the overall Goals of the master planning process is to plan a development and implementation plan that is fiscally responsible. Fiscally responsible is defined by:

- Looking at the availability of funding sources,
- Calculating the resulting charges to airport users including airlines, and

- Determining if the resulting use of sources of funding reflects the financial objectives and priorities of the Airport and maintains charges to its users within ranges acceptable to the Airport's overall objectives.

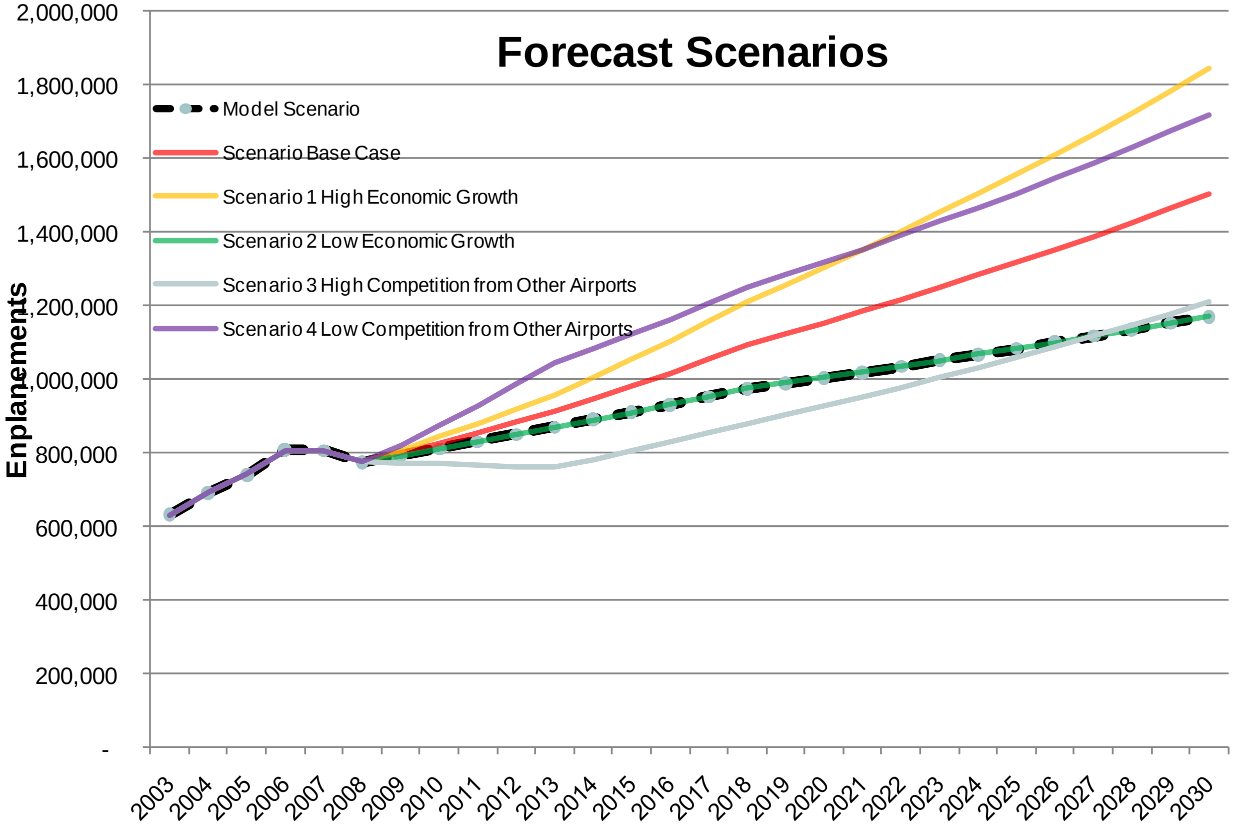
The purpose of this section is to demonstrate the Airport's financial capacity to deliver the capital improvement projects in this Master Plan Update and to outline the strategies for making future funding decisions. This analysis is not intended to determine the feasibility of bond issuance or other forms of debt financing, which would require a more extensive due diligence process. Rather, it is intended to show whether there are sufficient sources of capital (e.g. Federal and/or State grants, local funds, etc.) available to fund the projects recommended during the planning period. Capital projects were prioritized based on necessity and the urgency to resolve specific operational, safety / security and customer service issues. Funding availability was then assessed for each development alternative.

6.4-1 Forecast Passenger Demand

The Aviation Activity Forecasts presents the aviation activity forecast for this Master Plan. Given the ever present dynamics in the aviation industry, four activity demand forecast scenarios were developed in addition to a baseline forecast. Each assumes varying foreseeable conditions that could materialize within the 20-year analysis period. The Base Case was used as a basis for the facility requirements analysis. Funding sources have been analyzed under each of the scenarios to determine the range of funding that could be available for airport improvements. However, the financial capacity to implement Alternative 2 was confirmed under the low economic growth scenario to provide a more conservative outlook.

The Base Case and four activity scenarios are depicted below. The more cautious Model Scenario was used to confirm the financial feasibility of Alternative 2.

Figure 6-1: Base Case and Forecast Scenarios



6.4-2 Funding Sources

The Airport has four potential sources of funding for the capital projects as contained in this Master Plan:

- FAA Airport Improvement Program (AIP)
- FAA Passenger Facility Charge (PFC)
- Customer Facility Charges (CFC)
- Airline Rates & Charges

A description of those sources and estimates of future funding availability follows.

FAA AIP Funds

Funding is provided to airports through the Airport Improvement Program ("AIP") as awarded by the FAA. AIP funds are divided into two categories: discretionary funds and entitlement funds. Discretionary funds are awarded at the discretion of the FAA based on certain eligibility criteria, while entitlement funds are distributed to airports on a per enplanement basis, subject to an annual minimum. As a primary airport, PSP is entitled to a share of annual AIP entitlement funding.

Entitlement funds are distributed to airports on a per enplanement basis using the formula below:

- $7.80 per enplanement for the first 50,000
- $5.20 per enplanement for the next 50,000
- $2.60 per enplanement for the next 400,000
- $0.65 per enplanement for the next 500,000
- $0.50 per enplanement thereafter

In 2003, in accordance with federal law, the figure resulting from this formula has been doubled in any year where the total national AIP appropriation has been at least $3.2 billion. The total appropriation has been at least this large since 2003, and it is expected to be in the future. It is assumed that AIP will be funded at a level equal to or greater than the $3.2 billion threshold and that the above described formula will remain in effect to determine AIP entitlement distributions. Available AIP entitlement funds are expected to total nearly $75 million from FY 2011 through FY 2028, with a range from $72 million to $78 under the alternative forecast scenarios.

The Airport has received discretionary funding in the past to fund various airfield projects. Future discretionary funding will depend on the nature of the future projects and their ranking within the FAA's priority ranking system for discretionary funds. Due to the nature of the projects included in the alternatives, no discretionary funding has been assumed as part of this financial analysis.

Passenger Facility Charges

Passenger Facility Charges (PFCs) represent an important source of capital funding for airports. The FAA currently authorizes the collection of $4.50 per passenger enplanement to fund certain approved projects for a defined collection period. Based on on-going legislative efforts, it is expected that the federal government will increase the PFC cap from $4.50 to $6.00 or higher but in an undefined time period. This analysis assumes that PFC collections will be at $4.50 for evaluation of Alternative 2 - Immediate Action Plan but are increased to the $6.00 level for evaluation of Alternative 3 - Expand-in-Place and Alternative 4 - New Processor due to their later anticipated implementation of approximately 2021.

Eligible projects for PFC use include those projects which:

- Preserve or enhance safety, security, or capacity,
- Reduce or mitigate noise, and/or
- Enhance competition among air carriers.

Based on past historical collection rates, for this master plan it was assumed that 80% of enplanements are subject to PFC collection. Further it was assumed that the portion of PFC necessary to compensate carriers for the administrative burden or remittance will remain at the current $0.11 per PFC collected.

Annual PFC collections at a $4.50 level are projected to gradually increase from $2.7 million in FY 2011 to $5 million in FY 2028 based on projected passenger enplanements during this time period.

Collections of PFCs at the $4.50 level are committed to the payment of Outstanding Bonds including 1998 PFC Bonds, 2006 PFC Bonds and 2008 Bonds. There is currently approximately $29 million in outstanding principal amount on those bonds with a total estimated debt service of approximately $49 million.

If the PFC level is increased above $4.50, the City has the option to use the incremental collections for the payment of PFC-eligible costs rather than the payment of debt service.

It is projected that PSP will collect $62 million in PFCs between FY 2011 and FY 2021 at a $4.50 level, with $49 million applied to the payment of debt service on the outstanding bonds and $13 million available to assist in paying for project costs associated with Alternative 3 or Alternative 4. In the event that the PFC level was increased to $6.00, by FY2011, approximately $24 million of additional collection would be available for PFC eligible projects and $40 million of additional collections if the PFC level was increased to $7.00.

Customer Facility Charges (CFCs)

Costs related to the consolidated rental car facilities can be funded through the customer facility charge (CFC) charged to rental car customers pursuant to a resolution adopted by City Council in 2007. The CFC is a separate charge of $10 per transaction. The CFC collections can be used on a pay-as-you go basis for capital development or used to repay debt service on consolidated rental car facilities financed through special facility taxable bond funding.

PSP began collecting a CFC in 2007. Through June 2009, $4.4 million in CFCs have been collected with $ 2.1 million applied to rental car facility projects. CFC collections are forecast to continue at approximately $1.5 million per year gradually increasing to $2.7 for an aggregate collection of $39 million under the base passenger forecast, and ranging from $34 to $45 million under the range of scenarios. Historically, California law limits the CFC level to a maximum $10 per rental transaction. However, in October of 2010, the Governor signed into law S.B. 1192 which allows airports to increase the CFC collection amount, project specific to a per day fee instead of a single rental transaction fee. This feasibility analysis does not assume the airport will have any increases. In the event that limit is lifted, the Airport could choose to increase its collection rate and increase use of pay-as-you go funding or additional bond funding for rental car facility costs.

Airline Rates and Charges

Costs that are not eligible for funding through AIP grants, PFCs or CFCs must be paid through airport operating revenues or unrestricted cash balances.

The City collects fees and charges from airlines operating at the Airport based on a cost-recovery basis. The City has Airport Use and Lease Agreements with seven airlines serving PSP (Alaska Airlines, American Airlines, Horizon Air, Mesa Air Group / US Airways, SkyWest / Delta Connection, SkyWest / United Express, and WestJet). Under the agreements that were effective July 1, 2004, the Signatory Airlines have agreed to pay rates and charges under a residual rate structure which means that the airlines have agreed to pay all operating costs and debt service requirements not covered by PFCs and net of all other airport operating revenues. The non-signatory airlines operating at PSP pay rates and charges at 1.25 times the signatory rate. The current Airport Use and Lease Agreement (AULA) continues until its expiration on June 30, 2014. For the purposes of this analysis it is assumed that future versions of the AULA (beyond 2014) will continue to calculate airline fees on a residual basis and any future capital developments requiring funding from airline rates would require signatory approval. The Airport has a Special Capital Fund for which the airlines contribute up to $350,000 annually based on the schedule defined in the AULA. The Airport may expend no more than $250,000 of the fund annually without the consent or approval of the Signatory Airlines.

6.4-3 Development Alternatives

There are four development alternatives presented in the PSP Master Plan:

- Alternative 1 - No Action
- Alternative 2 - Immediate Action Plan
- Alternative 3 - Expand-in-Place Plan
- Alternative 4 - New Processor Plan

The four development alternatives were presented in detail in Chapter 5 and are briefly described in Section 6.2.

6.4-4 Funding Strategies

Alternative 2 - Immediate Action Plan

This financial funding analysis looks at the Master Plan projects only and does not incorporate other projects within PSP's capital program. Based on the nature of the projects and the available sources of funding, the projects relating to the consolidated rental car facilities are expected to be funded through Customer Facility Charges through a combined pay-as-you go basis and special facility taxable debt which is repaid through CFC collections. The remaining projects under Alternatives 2 would be financed through a combination of short-term GARB financing and incremental PFC collections in the event that the PFC level is increased above $4.50.

Based on the projected CFC collections through 2028, there is sufficient financial capacity for the $10 million in rental car projects in Alternative 2. The CFC would also provide financial capacity to implement further improvement to rental car facilities as envisioned in Alternatives 3 & 4.

However, the remaining portion of the projects in Alternative 2 will require additional evaluation and discussion with the airline stakeholders. With the current PFC collections pledged to the payment of outstanding PFC debt service, the $9 million in additional cost would result in a 20 – 30% increase in the airline charges measured on an enplaned passenger basis. While these projects provided significant improvements in passenger service levels, the airport staff and airline stakeholders will need to make a collective evaluation of where there is sufficient value for the improvements until additional passenger growth is demonstrated. Further, it may be possible to implement more limited improvements than those described within Alternative 2 in order to demonstrate improved value. Another alternative funding source includes the increases in revenues from non-aeronautical sources like airport concessions and vehicle parking rates.

Long-Term Funding Strategies for Alternatives 3 & 4

Alternative 3 – Expand-in-Place or Alternative 4 - New Processor both represent substantial capital investments that are planned to accommodate long-term growth in passenger volumes forecast over the next 20 years. Neither Alternative 3 nor Alternative 4 could be implemented in an effective piece-mail manner. Each alternative would require substantial up-front investment in construction and implementation. These challenges were anticipated during the planning of these alternatives and were the primary factors in the development of Alternative 2 - Immediate Action Plan. As described previously, the implementation of Alternative 2 would not prevent the Airport from efficiently implementing either Alternative 3 or 4 at a later date. Therefore, the Master Plan does not call for the implementation of one of these alternatives until approximately 2021. However, even at that later date, it is anticipated that implementation of Alternative 3 or 4 would substantially increase the cost per enplaned passenger above a range for considered reasonable for the carriers and markets served at PSP, based on the conservative analysis utilized in this study. Some of this increase in costs may be mitigated by future increases in PFC levels however, the timing and the amount of increase is still too uncertain to project at this time.

It is anticipated that the PSP Master Plan would be updated within five to ten years and that if the level of enplanements has grown as anticipated in this master plan and the Airport's financial strength has remained steady or improved, the timing may then be right to consider implementing one of these terminal development alternatives and to conduct the necessary financial capacity analysis with better information.

6.5 EVALUATION OF ALTERNATVES

The alternatives evaluation criteria are based on four general sources:

- Airport Mater Plan Update Goals and Objectives,
- The "best planning tenets and other factors" set forth in FAA Advisory Circular 150/5070-6B,
- Environmental criteria, and
- Fiscal factors.

The following analysis evaluates the alternatives on the basis of the four general sources and recommends an alternative(s). Alternatives considered for development are the consolidated landside and terminal alternatives previously defined:

1. No-Build
2. Immediate Action Plan
3. Expand-in-Place
4. New Processor

6.5-1 Goals and Objectives

At the outset of the master plan process, the Planning Team developed a series of goals and objectives intended to guide the development of master plan alternatives by providing criteria for evaluation. The FAA's "best planning tenets and other factors" were instrumental in the development of the Master Plan Goals and Objectives. Chapter 1 presented the following seven overarching goals:

1. Maintain and strengthen Airport safety and security
2. Enhance the Airport user experience through the efficient handling of passengers, aircraft operations, and commercial activity
3. Promote and help grow the tourism industry with facilities that reflect a high quality of customer experience consistent with this world class destination
4. Plan a development and improvement program that is fiscally responsible
5. Maximize the utilization of Airport facilities and land and promote sustainability in planning and design
6. Preserve and promote general aviation
7. Promote land use compatibility surrounding the Airport

The Planning Team utilized a rating system for each goal and each alternative consisting of a negative, neutral, or a positive indicator rating. A negative rating indicates that the specific alternative detracts from the goal. A neutral rating indicates that the specific alternative is neutral; it does not detract from nor does it meet the goal. A positive rating indicates that the specific alternative largely meets or exceeds the goal. A matrix, as depicted in **Table 6-6** was set up to evaluate and compare each alternative to each goal. Alternatives 1, 3, and 4 are considered as potential long-range alternatives and are measured against 2028 facility requirements. The evaluation criteria for Alternative 2, however, is different as the alternative is planned as a near term alternative and is measured against 2018 facility requirements. The following narrative analysis describes the ratings decision for each alternative.

Table 6-6: Alternatives Evaluation Matrix

	Alternative 1 – No-Build Alternative	**Alternative 2 – Immediate Action Plan**	**Alternative 3 – Expand-in-Place**	**Alternative 4 – New Processor**
Goal #1: Safety and Security	0	0	0	0
Goal #2: Airport User Experience	-	+	+	+
Goal #3: Tourist Industry	-	+	+	+
Goal #4: Fiscal Soundness	-	0	-	-
Goal #5: Facility Efficiency	-	+	+	+
Goal #6: General Aviation	+	+	+	+
Goal #7: Land Use Compatibility	-	+	+	+
Total	**-4**	**+5**	**+4**	**+4**

Source: HNTB Analysis

Goal #1: Safety and Security

This goal was mainly intended to guide applicable airfield development. As discussed earlier in this Chapter, airfield expansion is not proposed in this Master Plan. None of the alternatives detract or enhance the safety and security of the Airport. All of the Alternatives are rated zero for this goal. It is important to note that the existing airport meets or exceeds all established safety and security criteria and each of the proposed alternatives maintain the airport's existing safe, secure environment.

Goal #2: Airport User Experience

This goal pertains to planning facilities that meet a high caliber of service, relieve congestion, improve access, and accommodate demand. Alternative 1 proposes no action with regard to constructing additional facilities to improve user experience. The existing terminal and landside facilities do not accommodate the 2028 forecast activity level. The alternative would result in an extremely low level of service for Airport users. Alternative 1 is rated as a negative for this goal. Alternative 2 provides a short-term solution for the most significant problems that are currently being experienced (passenger processor and rental car facility deficiencies), and as a result, Alternative 2 earned a positive rating. Alternative 3 and Alternative 4 both meet the terminal and landside forecast facility requirements. Both alternatives relieve congestion. Furthermore, pedestrian and vehicular access to ground transportation facilities is improved in both alternatives. As a result, Alternatives 3 and 4 are both rated as positives for this goal.

Goal #3: Tourist Industry

This goal pertains to elevating the experience of tourists and the potential for accommodating international traffic. Alternative 1 fails to consider the unique needs of tourists. It does not improve the U.S. Customs and Border Protection facility to potentially allow the airport to accommodate expanded international service, nor does it propose rental car facilities that provide a high user and community experience. Therefore, Alternative 1 has a negative rating for this goal. Alternative 2 proposes a remodel of the ticketing and baggage claim halls to better accommodate the unique needs of tourism and visitor activity. The alternative also allows for the potential of accommodating increased international service with an expansion of the U.S. Customs and Border Protection facility. Alternatives 3 and 4 both address the unique needs and demands of tourism and visitor activity. Reconstructed ticketing and baggage facilities address the need to accommodate oversize baggage. Both alternatives do not preclude the possibility of accommodating a non pre-cleared commercial international flight. Alternative 4 provides a very high level of service for rental car users. A garage directly across from the baggage claim and ticketing area provide superior customer service for users. The garage proposed in Alternative 3 results in a longer walking distance for passengers returning their car than Alternative 4. Alternatives 2, 3, and 4 all propose to relocate the rental car vehicle service facilities southward to a location to improve noise compatibility in the surrounding area. Overall, Alternatives 2, 3 and 4 all earn a positive rating.

Goal #4: Fiscal Soundness

This goal pertains to the development of alternatives that consider cost in their development, allow the Airport to generate additional revenue, maximize eligibility for FAA funding, and consider alternate funding sources for capital improvements. Alternative 1 is cost effective as it does not require a capital program to implement, but the physical constraints of the facility could prevent the airport from maximizing its potential revenue. Alternative 1 also prevents the Airport from capitalizing on eligibility for FAA funding. Alternative 1 earns a negative rating for this goal. Alternative 2 addresses the most critical near-term constraints at the Airport. Though Alternative 2 does not maximize opportunities to generate additional revenue, it is intended to have the lowest feasible cost of implementation. Alternative 2 earns a positive rating for this goal because it is a financially feasible, near-term solution that makes maximum use of the airport's existing Customer Facility Charge (CFC). Of the full build alternatives, Alternative 3 is estimated to be less expensive than Alternative 4. Both alternatives maximize the Airport's eligibility to receive FAA funding and potentially allow the Airport to generate additional revenue. However, these alternatives are not financially feasible for development at the current time based on the airport's financial capacity. Because Alternatives 3 and 4 would require a substantial debt financing, both earn a negative rating for this goal.

Goal #5: Facility Efficiency

This goal pertains to planning facilities that maximize the utilization of Airport facilities. Alternative 1 does not develop facilities that will minimize terminal area congestion and address forecast demand. Alternative 2 provides additional meaningful capacity until approximately 2018. The terminal processor remodel would allow for a greater utilization of existing area. Alternatives 1 earned a negative rating for this goal, while Alternative 2 earned a positive rating for this goal. Alternatives 3 and 4 consider reducing terminal area congestion and improve ground transportation access. The parking and roadway systems contained in these alternatives minimize congestion and address the forecast demand. Alternatives 3 and 4 both earn a positive rating for this goal.

Goal #6: General Aviation

This goal pertains to planning facilities that accommodate the needs of general aviation users and maximize opportunities for general aviation development. The proposed airport-wide land use plan provides ample opportunity for general aviation development with minimal disruption to existing facilities. All alternatives earn a positive rating for this goal.

Goal #7: Land Use Compatibility

This goal pertains to enhancing the land use compatibility of the Airport with the surrounding community. Alternative 1 fails to enhance the land use compatibility of the Airport. Alternative 1 does not reduce neighborhood noise concerns due to rental car vehicle servicing, nor does it improve energy efficiency of facilities. Alternative 1 earns a negative rating for this goal. Alternatives 2, 3, and 4 all address the noise compatibility issues with rental car vehicle servicing. These alternatives also complement the Airport Land Use Compatibility Plan (ALUCP). Alternatives 2, 3, and 4 all earn a positive rating for this goal.

Evaluation Results

The evaluation results are presented in **Table 6-6**. Alternative 1 yields the lowest rating with a total rating of negative four because it does not address the current and projected deficiencies at the Airport. Alternative 2's rating is positive 5, because it provides a feasible plan for near-term improvements. Alternatives 3 and 4 both total a rating of positive 4. The three build alternatives largely meet the criteria set forth in the Master Plan Goals and Objectives.

6.6 ENVIRONMENTAL DISCUSSION

To supplement the evaluation of alternatives based on the Master Plan Goals and Objectives, a preliminary environmental discussion is included. The discussion serves as a basis for any subsequent NEPA / CEQA environmental documentation following this Master Plan Update. The below environmental discussion applies to all build alternatives and is tiered off previous master plan updates and their respective environmental review documents from 1994[15] and 2003.[16] The discussion also considers the Palm Springs General Plan for City/Airport interface environmental issues.[17]

1. **Environmental Justice/Socioeconomic and Community Effects:** This potential project impact (Environmental Justice) was added as a NEPA topic in 1994 and was not specifically addressed in prior Master Plan Updates. Given that 1) environmental justice populations (if any) are located off airport property, and 2) the off-site impacts of the project do not vary between any of the alternatives, including the no-build alternative, no impacts to environmental justice resources are anticipated, and this topic does not need to be addressed in the NEPA environmental document. Note: This conclusion is based upon the fact that none of the proposed alternatives directly impacts existing off-site housing.

2. **Section 4(f) Resources and Parks/Recreation:** A windshield survey, document research and prior environmental analysis found no publicly-owned parks, recreation areas, or wildlife or waterfowl refuges in the project area. Therefore, impacts to Section 4(f) resources are not anticipated. Because the number of operations will be the same regardless of the alternative selected, there will be no difference in impacts to off-site Section 4(f) resources under NEPA.[18] Therefore, no Section 4(f) analysis will be required, based upon the current proposed Master Plan Alternatives.

3. **Visual Effects:** The NEPA document for the 2009 Master Plan should address visual effects per FAA NEPA requirements.

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[15] Palm Springs Regional Airport F.A.R. Part 150 Noise Compatibility Program, Coffman Associates, Inc., June 1994
Palm Springs Regional Airport Environmental Impact Report/Environmental Assessment for Implementation of Airport Master Plan and F.A.R. Part 150 Study, Coffman Associates, Inc., January 1995.

[16] Airport Master Plan for Palm Springs International Airport, Coffman Associates, Inc., June 2003.
Airport Master Plan Initial Study, City of Palm Springs, June 2003

[17] City of Palm Springs General Plan, Planning Center, October 2007.

[18] Note: The impacts to off-site parks and recreation sites may be different under CEQA.

4. **Water Quality and Erosion:** Construction of the project is subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit and any statewide permit in effect at the time of plan implementation. Permit compliance is likely to be sufficient to minimize erosion and construction-related water quality impacts. Although hazardous waste sites were previously identified within the project area, infiltration into groundwater was not anticipated because the water table was determined to be a minimum 210 feet below ground surface and hazardous waste was shown to be no greater than five feet below ground surface. The Palm Springs General Plan Update EIR (2007) supports these findings by indicating water levels at greater than 50 feet below ground surface in the general area of the airport.

   Consistent with the NPDES permits, construction site, design pollution prevention, and treatment best management practices (BMPs) will be implemented to minimize potential water pollution during construction and future operation of the proposed project. Feasibility of various treatments, design pollution prevention, and temporary construction BMPs will be documented in a Storm Water Data Report for the project. Construction site BMPs will be detailed in and implemented via a Storm Water Pollution Prevention Plan (SWPPP). Any new NEPA documentation would provide necessary supporting analysis.

5. **Hydrology/Floodplain:** The 2007 Palm Springs General Plan flood zone map indicates a limited area of floodplain near the airport, with only small areas between the limits of 100-year and 500-year or 100-year with-flood depths of less than a foot at the southeast and northeast corners of the airport. Alterations to impervious surfaces within the project area also must be addressed in terms of effects to local hydrology.

6. **Air Quality:** An updated Air Quality Analysis at both regional and project levels will be necessary, as will a determination of federal air quality conformity.

7. **Noise:** A Noise Impact Analysis will be required to determine current and projected CNEL noise levels at sensitive receptor locations within the project area, along with any need for additional mitigation measures. The most recent noise analysis was conducted for the 1994 Master Plan, which identified extensive mitigation measures that have been implemented. In addition, the current aircraft fleet is substantially quieter than the 1994 fleet. With the completed phase-out of Stage 2 aircraft, and the general trend toward quieter Stage 3 aircraft, CNEL noise levels likely have declined. Also, ground transportation activity, both on and off airport property, and other potential noise-generating activities need to be addressed. NEPA analysis should estimate airport related noise levels.

8. **Wild and Scenic Rivers:** The project area contains no Wild and Scenic Rivers, so the proposed project will have no effect on such resources.

9. **Cultural Resources:** Prior environmental analysis determined that archaeological resources within the project area were likely to be minimal. However, the presence of unknown buried

resources cannot be ruled out. The NEPA document should contain potential mitigation measures to address unknown buried resources.

With respect to historic resources, the NEPA environmental document should conduct an assessment of resources eligible for historic designation. In April 2009, the Palm Springs City Council designated the west façade of the airport terminal a Class 1 historic resource. The environmental review of the 2009 Master Plan Update must address the ramifications of this designation; however, the findings for the designation acknowledge the potential for FAA requirements that could supersede the City's authority to evaluate airport alterations.

10. **Native American Coordination:** Native American consultation must be coordinated in order to determine consistency with conclusions made during consultation for the 1994 Master Plan Update, which indicated that tribal resources have a low likelihood of presence in the project area because it was not regarded as a settlement site or location for overnight stays. No additional analysis is required.

11. **Paleontological Resources:** The NEPA document for the 2009 Master Plan should assess the potential for paleontological resources on the site.

12. **Hazardous Waste/Materials:** Hazardous waste/materials sites were previously identified in the 1994 Master Plan Update environmental review process and in the 2007 Palm Springs General Plan. A former landfill to the east of the airport but within the area of analysis was identified (the site of the Springs Shopping Center).

    Among potential leaking underground fuel tanks in or near the airport per the 2007 Palm Springs General Plan is the existing Dollar Rent-a-Car facility. Its current status is unknown.

    There are no Superfund sites in the City of Palm Springs.[19]

13. **Biological Resources:** Prior biological analysis for the 1994 Master Plan Update indicated the presence within the project area of sensitive fauna (fringe-toed lizard) and habitat for sensitive flora such as Coachella Valley milkvetch. The Coachella Valley Multiple Species Habitat Conservation Plan (September 2007) developed conservation plans for the fringe-toad lizard and the Coachella Valley milkvetch; these conservation plans do not include airport properties. The NEPA environmental document for the Airport Master Plan should review the status of these species and other potential conservation requirements.

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[19] Palm Springs General Plan Update Draft Environmental Impact Report, State Clearinghouse Number 2006071060; the Planning Center, March 2007.

Bird species covered by the Migratory Bird Treaty Act (MBTA) may be present within the project area. The NEPA environmental document should include appropriate avoidance and minimization measures.

14. **Wetlands:** As noted in the environmental analysis for the 1994 Master Plan Update, there are no blueline wetlands within the project area. Given the desert conditions, no wetlands are expected.

15. **Invasive Plant Species:** The NEPA document for the 2009 airport master plan should address project compliance with Executive Order 13112 regarding Invasive Species, which was implemented in 1999 after environmental review of prior biological analysis for the 1994 Master Plan Update.

16. **Right-of-Way Relocation or Staging Area**: Current understanding of project alternatives does not indicate a need for construction easements or right-of-way relocation. Therefore, no additional NEPA review is required.

17. **Coastal Zone:** Palm Springs International Airport is not located in a coastal zone. No coastal zone considerations are necessary in a NEPA document.

18. **Consistency with State, Regional, and Local Plans:** Available Alternatives information indicates no inconsistencies with any state or regional plans. However, when finalized, the proposed 2009 Master Plan Alternatives should be reviewed for their consistency with the City of Palm Springs General Plan and Municipal codes.

19. **Growth:** The proposed 2009 Master Plan accommodates forecast growth; under NEPA baseline criteria, the proposed project is not considered growth-inducing.

20. **Cumulative Impacts:** Because development in the project area was consistent with local and Coachella Valley Association of Government projections under the 1994 Master Plan, no cumulative impacts were noted or foreseen. A similar scenario is anticipated for the 2009 Master Plan Update.

21. **Community Impacts (Community Character and Cohesion):** None of the alternatives proposed for the 2009 Master Plan Update currently proposes altering the boundaries of the airport; therefore, the proposed project would not physically divide an established community. Under the Build alternatives of the Master Plan, alteration to the scale of the built environment at the airport could affect visual cohesiveness of the project area.

22. **Energy/Utilities/Emergency Services:** The 1994 Master Plan Update noted a large anticipated increase in water consumption, wastewater generation, solid waste generation, and electricity consumption associated with airport development. Further analysis would be necessary to determine whether projections were met, and whether similar projections for the current endeavor will be made and the demand met. The 2007 Palm Springs General Plan Update

Environmental Impact Report (EIR) indicated that upon project buildout, stormwater quality standards and wastewater treatment capacity for the City will be exceeded. NEPA analysis for the new airport master plan will have to address these water quality issues.

23. **Traffic and Transportation/Pedestrian and Bicycle Facilities:** The traffic setting has changed since development of the 1994 Master Plan Update. Several scenarios for surface transportation development were considered, but not all were implemented. Most notably absent is an extension of the Mid-Valley Parkway as a freeway through the Whitewater Wash from Mesquite Avenue to Interstate 10. Similarly, a tunnel under the airport along the Alejo Road corridor was removed from future consideration. Updated traffic analysis should address the existing and revised projected street development as well as pedestrian and bicycle circulation in the project area.

24. **Geology/Soils/Seismic:** As noted in previous environmental review, the project area is subject to strong seismic shaking but does not lie within a fault zone and is thus not subject to fault rupture.

6.7 CONCLUSION

Following review of the alternatives evaluation, input of technical committee, and public input, and financial feasibility analysis, the recommended alternative selected for this Master Plan Update is Alternative 2 - Immediate Action Plan. A phasing and implementation plan is presented in Chapter 7.

The alternatives development and evaluation process for PSP was unique. This Master Plan Update was initiated in October 2008, at the cusp of the worst economic recession in the United States in eight decades. Further, the impacts of the recession and the volatility of fuel prices have taxed the airline industry. These challenges were, however, accounted for within the PSP Master Plan Update. The forecast of aviation activity assumes that the economy and the airline industry will recover and that Palm Springs and the Coachella Valley have a healthy future of growth in tourism that will be reflected in passengers and operations at PSP. However, the Master Plan Update must be concluded in early 2010 when there are positive signs for economic recovery but a degree of uncertainty remains. It is for this reason, primarily, that the recommended approach is one of restraint. There is no doubt that PSP is in need of improvements to its ticketing facilities, bag-claim facilities, and rental car facilities. Further, there is support among the technical committee and airport staff for pursuing these improvements. Thus, a refined development plan was prepared that would allow PSP an opportunity to make further improvements in a cautious manner responsive to the current uncertain economy. These improvements will allow PSP to upgrade its "front door" ticketing and bag-claim facilities, improve the user experience for rental car customers, and help alleviate the noise impacts faced by residents that live near the current rental car maintenance facilities.

Finally, implementation of Alternative 2 - Immediate Action Plan will provide improvements that will accommodate growth for the next five to ten years and may make the implementation of large scale terminal improvements more feasible in the future. It will be essential to evaluate the market in another master plan before 2018 and re-consider Alternatives 3 and 4 at that time.

Chapter 7: Implementation Plan

7.1 INTRODUCTION

The purpose of this Chapter is to introduce a phased approach to delivering the recommended master plan alternative from planning and environmental analysis, through programming and design, to construction. This report will provide general guidance on, and a time-line for the steps required following completion of the airport master plan. The recommended alternative, referred to as the 'Immediate Action Plan' (Alternative 2), was determined based on an alternatives evaluation presented in Chapter 6.

Beyond the sequencing of the actual construction of improvements, the time required to complete the planning, programming and design phases must also be considered. Airport improvement programs require significant investment in "up-front time" to allow for the preparation and review of environmental documentation, architectural and engineering design development, funding approvals, and permitting by local, state, and federal agencies.

The airport master plan provides a broad framework for airport improvements but is not intended as a sufficiently detailed analysis to support, on its own, the implementation of a project. The implementation plan does, however, provide a guide to major components that will be required before the City of Palm Springs can procure a contractor to construct the proposed program.

There are four primary components to the implementation plan for the recommended master plan alternative for Palm Springs International Airport (PSP):

1. Environmental Analysis
2. Advanced Planning / Programming
3. Design
4. Construction

The primary implementation steps are detailed in the following sections.

7.2 ENVIRONMENTAL ANALYSIS

Physical improvements to Palm Springs International Airport require evaluation of their potential environmental and societal impacts in accordance with federal law and state law.

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the potential impacts of their proposed actions and all reasonable alternatives. Palm Springs International Airport is not a federal agency, but it receives substantial federal funding and support under the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems. Therefore, prior to FAA acceptance of an updated Airport Layout Plan (ALP) or the issuance of federal grant money to support airport improvements, Palm Springs International Airport must complete an environmental analysis.

The State of California also requires review of potential environmental impacts. CEQA, or the California Environmental Quality Act, is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. Prior to the City of Palm Springs, which owns and operates Palm Springs International Airport, adopting the Airport Master Plan as an official development policy statement, it must complete an analysis of potential environmental impacts according to CEQA guidelines.

Though it is possible to prepare separate environmental analyses to meet the NEPA (federal) and CEQA (state) requirements, these documents are commonly prepared jointly because there is substantial overlap in the analysis of impact categories. However, only the preparation of the NEPA portion of the documentation is eligible for funding assistance from FAA. Until the CEQA / NEPA documentation is complete, the Master Plan will remain a draft document and will not reflect an officially adopted policy of the City of Palm Springs.

Depending on the magnitude of proposed improvements, the detail of the required environmental documentation can vary. Projects that are expected or known to have significant impacts require extensive documentation articulating how these potential impacts can be mitigated.

Based on a preliminary review of the NEPA environmental impact categories presented in Chapter 6, the recommended master plan alternative (Alternative 2 - Immediate Action Plan) is not anticipated to have any significant environmental impacts primarily due to two factors:

1. There are no alterations to the airport runway pavement proposed.
2. An increase in airfield capacity is not proposed.

A formal environmental scoping, following on the preliminary environmental summary presented in Chapter 6, will determine the level of required environmental analysis under both NEPA and CEQA. The scoping process is a significant step during which the Airport invites the participation of, and comments from, a broad array of local, state and federal agencies as well as the general public. Unless the scoping process should uncover the potential for significant environmental impacts to result from implementation of the recommended alternative, it is anticipated that the environmental analysis for the Palm Springs Master Plan should take approximately one year to complete.

Completion of the environmental analysis process will be marked by issuance of a “Finding of No Significant Impact” or FONSI. Upon receipt of the FONSI, the City of Palm Springs will be in position to formally adopt the Airport Master Plan as official policy and guidance for development of the Airport.

7.3 ADVANCED PLANNING / PROGRAMMING

The Airport Master Plan is an initial study that identifies and recommends appropriate airport facility improvements to meet forecast growth. Typically, master planning documents do not present substantial detail about the recommended improvements. Rather the master plan presents a broad guide for the scale and location of proposed improvements. Following completion of a master plan, specific facility improvement project components may be earmarked for advanced planning. It is at this time that the project is considered at a much finer level of detail and programmatic criteria are established for the proposed improvements.

During advanced planning it is essential that airport tenants impacted by the proposed improvements have active involvement in the continued development of the alternatives that may affect their operating environment and costs. The advanced planning process is typically the first opportunity design specialists begin to consult on various project components meaning architects, engineers, and infrastructure supply specialists (e.g. representatives of required mechanical component manufacturers) will become involved. The complexity of the advanced planning process is a direct reflection of the complexity of the recommended program and its project components. It is anticipated that the Immediate Action Plan will require additional advanced planning to develop criteria for the proposed rental car facilities and facilitate coordination with rental car companies, and determine the final scope and style of terminal modifications.

This Master Plan is unique in that it provides two long range development options for the terminal facility. Decisions made now may ultimately be reflected in the cost and complexity of future airport improvements. The advanced planning phase of implementation is the appropriate time to study these potential impacts in greater detail and arrive at an informed decision regarding specific project components.

7.4 DESIGN

The final phase of implementation prior to start of construction is design. The design phase involves the selection of engineers and architects to prepare certified design drawings based on the criteria established during the advanced planning phase. These drawings are then used by the builder to construct the proposed facilities. There are many methods of delivering the design and construction phases of the project and the City will need to evaluate the right options to meet their needs, minimize costs, and bring the projects online with the greatest degree of efficiency. The construction delivery method can also impact the schedule and depending on the results of more detailed cost estimates and the financial analysis for the rental car facility improvements there may be an incentive to expedite the design and construction processes. It is not unusual for airports to lease land to third party developers that will design a facility to address the needs of the airport's tenants and then construct the improvements at no capital outlay to the airport. This can save the airport time and effort.

7.5 CONSTRUCTION PHASING

The Immediate Action Plan has two primary components:

- Rental Car Facilities
- Terminal Processor Improvements

The construction of these facilities needs to be coordinated so that existing facilities can remain operating until a suitable replacement is online and ready to replace the existing facility. Enabling work refers to projects that are needed only to enable the implementation of the proposed improvements. In the case of the Immediate Action Plan, the only enabling project required is the relocation of the existing commercial vehicle hold lot area where taxis and shuttle vehicles stage prior to picking up passengers at the airport. This parking lot is currently located at the corner of South El Cielo Road and Kirk Douglas Way. It will be relocated to a site along Kirk Douglas Way near the intersection with Airport Center Drive.

7.5-1 Construction Preparation Phase

This phase includes preparation of the construction site including the setup of a construction management office, materials lay-down site, and staging area.

Construction Phase I (**Figure 7-1**):

- Construct new commercial vehicle hold lot at Kirk Douglas Way and Airport Center Drive.
- Construct Rental Car storage and maintenance site in existing overflow parking area along Kirk Douglas Way.
- Construct new, larger employee parking lot along Kirk Douglas Way.
- Construct new interim customs and border protection processing facility.
- Expand existing public parking lot
- Close airport entrance at East Baristo Way and South East El Cielo Road

Relocation Phase I:

- Relocate commercial vehicle staging to new parking lot
- Relocate rental car storage and maintenance to new area.
- Relocate employee parking to new lot.
- Relocate customs and boarder protection operations (international arrivals) to new facility.

Construction Phase II (**Figure 7-2**):

- Construct new rental car vehicle service area, including offices, fueling station, and car-wash at corner of South El Cielo Road and Kirk Douglas Way.
- Expand former employee parking lot for public parking.
- Construct relocated airport circulation roadway as necessary.
- Demolish existing aircraft hangar/customs facility along South El Cielo Road.

Relocation Phase II:

- Relocate all rental car turn-around operations (fueling/washing) to new rental car vehicle service area.
- Open expanded public parking area along Kirk Douglas Way.

Construction Phase III (**Figure 7-3**):

- Demolish former rental car fueling, washing, and maintenance facilities along East Civic Drive, improve fencing and pavement to accommodate seasonal overflow parking.
- Construct new rental car customer service center, ready lot, and return lot along South El Cielo Road, north of airport terminal.

Relocation Phase III:

- Relocate all rental car customer service, pick-up, and return operations to new customer service center and lot.

Construction Phase IV (**Figure 7-4**):

- Remodel ticketing wing of terminal (will require sub-phases). Construct new facade at the face of the existing columns and fill in a new portion of roof and a new ramp down to the lower level Ticketing Lobby at the south end. Reconfigure the existing curb to maintain an acceptable minimum depth.
- Remodel baggage-claim wing of terminal including replacement and expansion of baggage carousels (will require sub-phases). Remove the car rental counters, reconfigure or relocate the USO and extend the baggage claim devices.
- Construct auxiliary parking lot located at South El Cielo Road and East Baristo Way

Relocation Phase IV:

- Open remodeled terminal – program complete.

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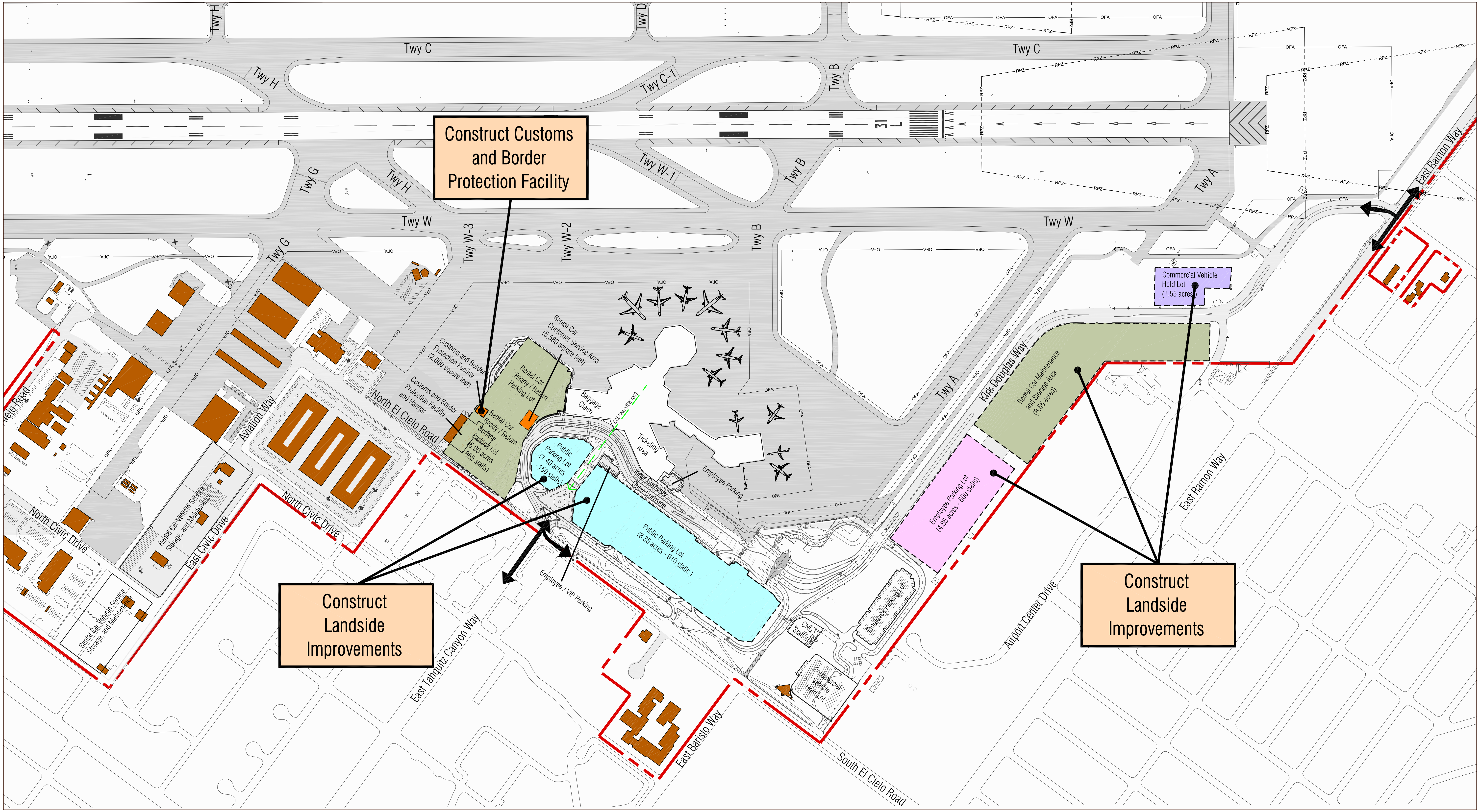
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Construct Customs and Border Protection Facility
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East Ramon Way
Twy W
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Twy W-2
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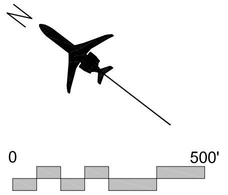
Twy G
Commercial Vehicle Hold Lot (1.55 acres)
Rental Car Customer Service Area (5,580 square feet)
Customs and Border Protection Facility (2,000 square feet)
Rental Car Ready / Return Parking Lot
Customs and Border Protection Facility and Hangar
Rental Car Ready / Return Surface Parking Lot (5.90 acres 865 stalls)
Baggage Claim
EXISTING VIEW AXIS
Public Parking Lot (1.40 acres -150 stalls)
Ticketing Area
Inner Curbside
Outer Curbside
Employee Parking
Public Parking Lot (8.35 acres - 910 stalls)
Kirk Douglas Way
Twy A
Rental Car Maintenance and Storage Area (8.55 acres)
Employee Parking Lot (4.85 acres - 600 stalls)
East Ramon Way
Employee Parking Lot
Airport Center Drive
Construct Landside Improvements
CNG Station
Commercial Vehicle Hold Lot
Cielo Road
Aviation Way
North El Cielo Road
North Civic Drive
North Civic Drive
Rental Car Vehicle Service, Storage, and Maintenance
East Civic Drive
Rental Car Vehicle Service, Storage, and Maintenance
Construct Landside Improvements
East Tahquitz Canyon Way
Employee / VIP Parking
East Baristo Way
South El Cielo Road
OFA
RPZ

Source: HNTB Analysis



Construction Elements

- 🟪 Construct Commercial Vehicle Hold Lot
- 🟩 Construct Rental Car Maintenance / Storage Area
- 🟪 Construct Employee Parking Lot
- 🟧 Construct Customs Border Protection Facility
- ▭ Expand Existing Public Parking Lot
- ▨ Close East Baristo Way Airport Entrance
- 🟫 Existing On-Airport Facility
- Lot Existing Facility / Lot
- Airport Property Line
- ↔ Airport Entrance/Exit
- → Existing View Axis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

Construction Phase 1

Figure 7-1

Palm Springs International Airport
Master Plan

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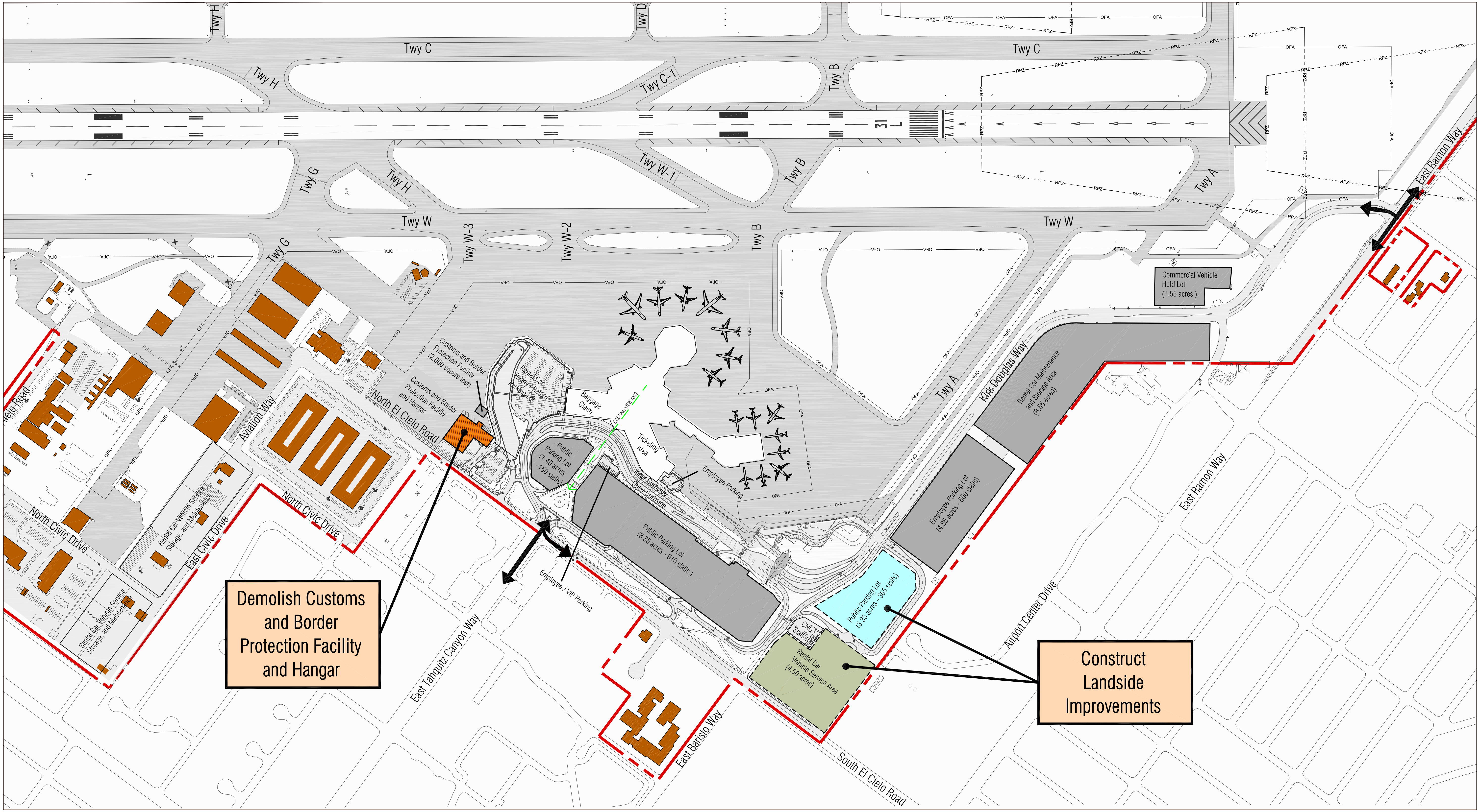
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Twy W
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East Ramon Way
Commercial Vehicle Hold Lot (1.55 acres)
Customs and Border Protection Facility (2,000 square feet)
Customs and Border Protection Facility and Hangar
Rental Car Ready / Return Parking Lot
Baggage Claim
Existing View Axis
Ticketing Area
Inner Curbside
Outer Curbside
Employee Parking
Public Parking Lot (1.40 acres - 150 stalls)
Public Parking Lot (8.35 acres - 910 stalls)
Kirk Douglas Way
Twy A
Rental Car Maintenance and Storage Area (8.35 acres)
Employee Parking Lot (4.85 acres - 600 stalls)
East Ramon Way
Public Parking Lot (3.35 acres - 365 stalls)
CNG Station
Rental Car Vehicle Service Area (4.50 acres)
Airport Center Drive
Aviation Way
North El Cielo Road
North Civic Drive
North Civic Drive
East Civic Drive
Rental Car Vehicle Service, Storage, and Maintenance
Rental Car Vehicle Service, Storage, and Maintenance
Employee / VIP Parking
East Tahquitz Canyon Way
East Baristo Way
South El Cielo Road
Demolish Customs and Border Protection Facility and Hangar
Construct Landside Improvements
OFA
RPZ

Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N
0 500'

Construction Elements

- ▩ Phase 1 Completed Construction Elements
- ▩ Construct Rental Car Vehicle Service Area
- ▩ Expand Former Employee Parking Lot to Public Parking Lot
- ▨ Demolish Existing Customs and Border Protection Facility and Hangar

- ■ Existing On-Airport Facility
- Lot Existing Facility / Lot
- ☐ Demolished Facility / Lot / Road
- —·— Airport Property Line
- ⟷ Airport Entrance/Exit
- – – → Existing View Axis

Construction Phase 2

Figure 7-2

Palm Springs International Airport
Master Plan

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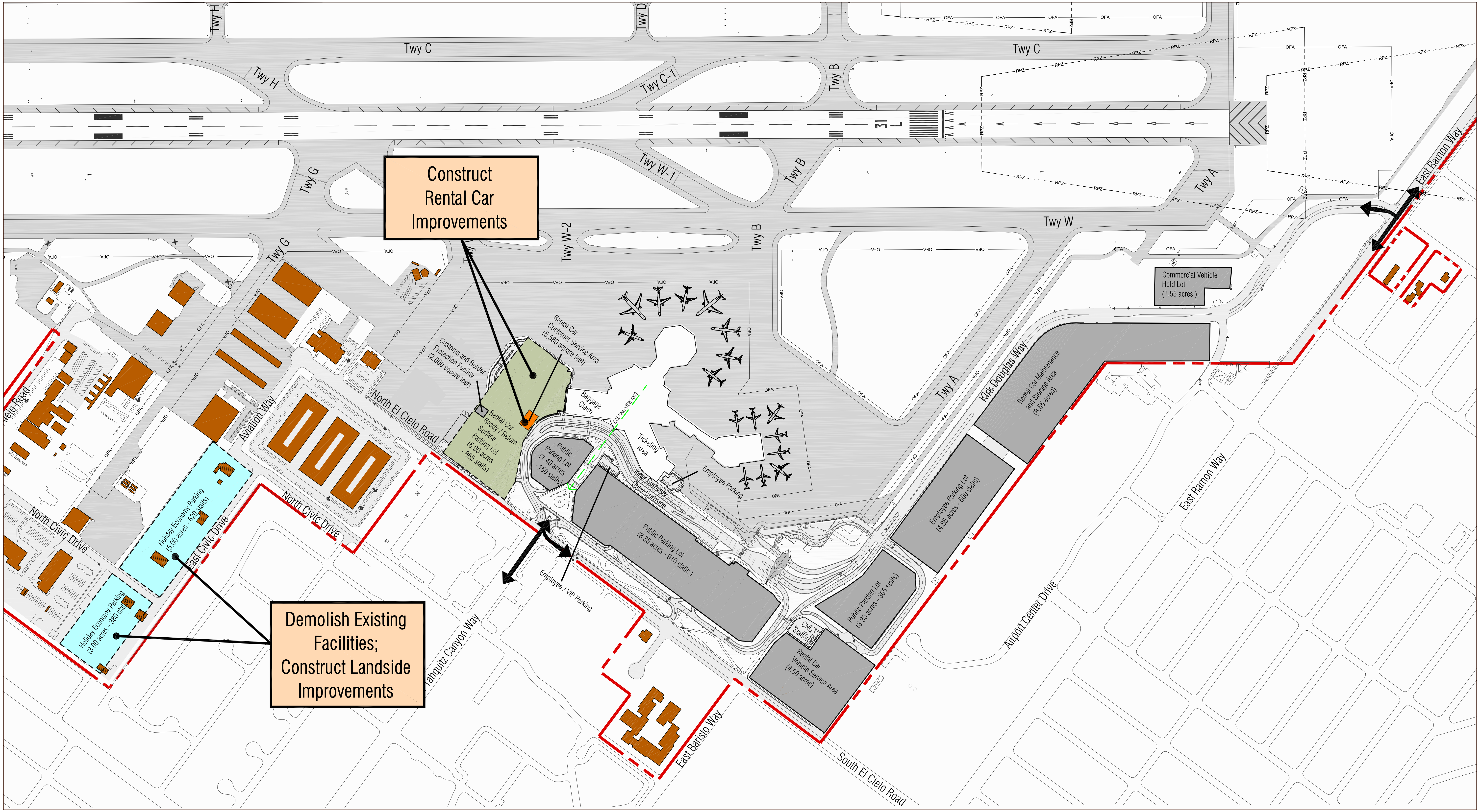
Construct Rental Car Improvements
Demolish Existing Facilities; Construct Landside Improvements
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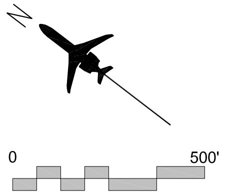
31L
East Ramon Way
Commercial Vehicle Hold Lot (1.55 acres)
Rental Car Customer Service Area (5,580 square feet)
Customs and Border Protection Facility (2,000 square feet)
Rental Car Ready / Return Surface Parking Lot (5.90 acres - 865 stalls)
Baggage Claim
EXISTING VIEW AXIS
Ticketing Area
Public Parking Lot (1.40 acres -150 stalls)
Employee Parking
Inner Curbside
Outer Curbside
Public Parking Lot (8.35 acres - 910 stalls)
Employee / VIP Parking
Kirk Douglas Way
Rental Car Maintenance and Storage Area (8.35 acres)
Employee Parking Lot (4.85 acres - 600 stalls)
Public Parking Lot (3.35 acres - 365 stalls)
CNG Station
Rental Car Vehicle Service Area (4.50 acres)
Airport Center Drive
North El Cielo Road
South El Cielo Road
East Baristo Way
Tahquitz Canyon Way
North Civic Drive
East Civic Drive
Aviation Way
Holiday Economy Parking (6.00 acres - 620 stalls)
Holiday Economy Parking (3.00 acres - 380 stalls)
OFA
RPZ

Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE



Construction Elements

- ▩ Phase 1, 2 Completed Construction Elements
- ▨ Demolish Rental Car Vehicle Service, Maintenance and Storage Facilities
- 🟧 Construct Rental Car Customer Service Area
- 🟩 Construct Rental Car Ready / Return Parking Lot
- ☐ Construct Holiday Economy Parking Lot

- 🟫 Existing On-Airport Facility
- Lot Existing Facility / Lot
- ☐ Demolished Facility / Lot / Road
- –·– Airport Property Line
- ⟷ Airport Entrance/Exit
- – – → Existing View Axis

Construction Phase 3

Figure 7-3

Palm Springs International Airport
Master Plan

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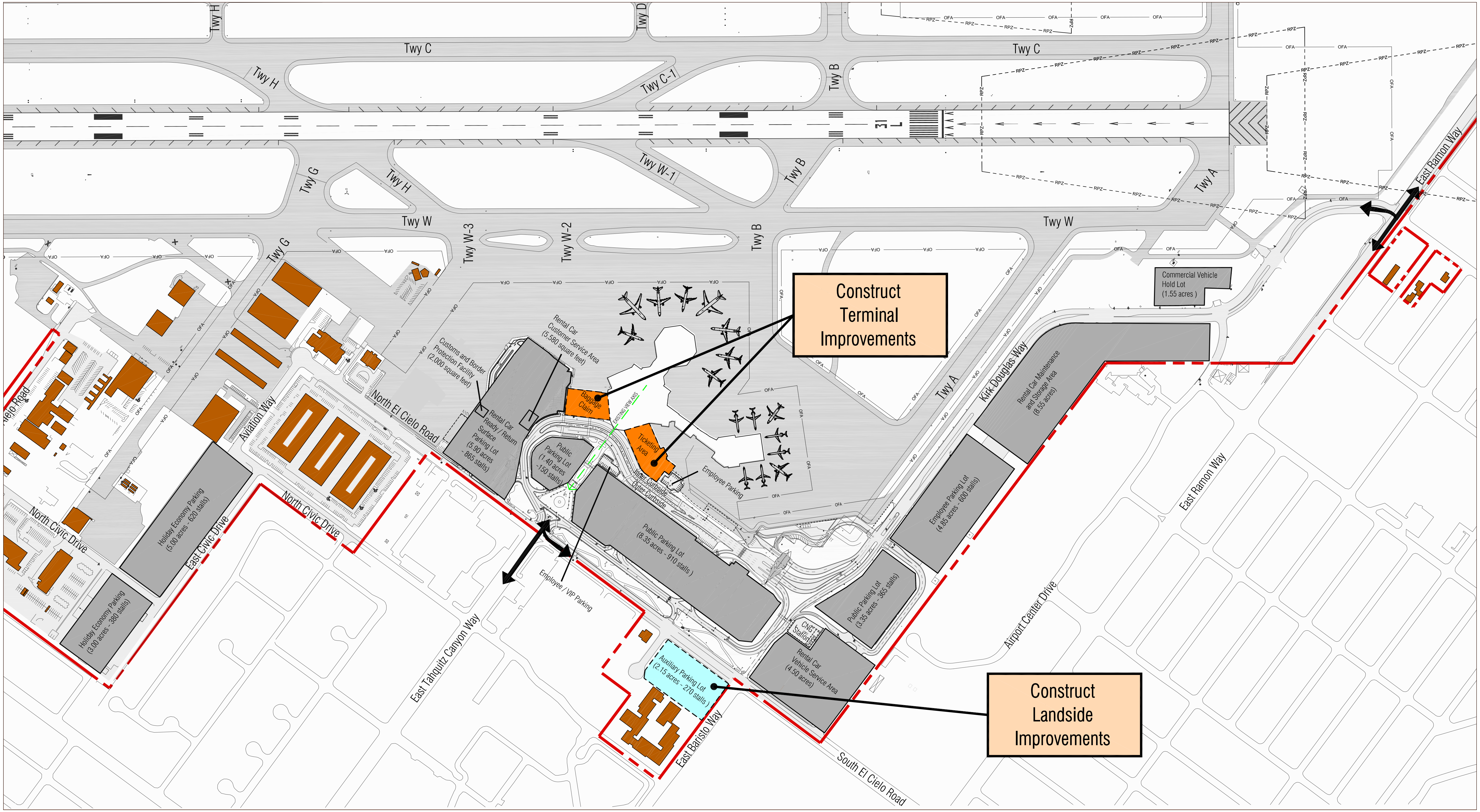

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Twy B
Twy A
Twy W
Twy W-3
Twy W-2
Twy B
Twy W
Twy G
Construct Terminal Improvements
Commercial Vehicle Hold Lot (1.55 acres)
East Ramon Way
Rental Car Customer Service Area (5,580 square feet)
Customs and Border Protection Facility (2,000 square feet)
Baggage Claim
EXISTING VIEW AXIS
Ticketing Area
Employee Parking
Inner Curbside
Outer Curbside
Twy A
Kirk Douglas Way
Rental Car Maintenance and Storage Area (8.35 acres)
North El Cielo Road
Aviation Way
Rental Car Ready / Return Surface Parking Lot (5.90 acres - 865 stalls)
Public Parking Lot (1.40 acres -150 stalls)
Public Parking Lot (8.35 acres - 910 stalls)
Employee Parking Lot (4.85 acres - 600 stalls)
East Ramon Way
Holiday Economy Parking (5.00 acres - 620 stalls)
North Civic Drive
East Civic Drive
North Civic Drive
Employee / VIP Parking
Public Parking Lot (3.35 acres - 365 stalls)
CNG Station
Airport Center Drive
Holiday Economy Parking (3.00 acres - 380 stalls)
East Tahquitz Canyon Way
Auxiliary Parking Lot (2.15 acres - 270 stalls)
Rental Car Vehicle Service Area (4.50 acres)
Construct Landside Improvements
East Baristo Way
South El Cielo Road
OFA
RPZ

Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

N

0 500'

Construction Elements

- ■ Phase 1, 2, 3 Completed Construction Elements
- ■ Remodel Ticketing and Baggage Claim Area
- ▨ Construct Auxiliary Parking Lot

- ■ Existing On-Airport Facility
- Lot Existing Facility / Lot
- ☐ Demolished Facility / Lot / Road
- —·— Airport Property Line
- ⟷ Airport Entrance/Exit
- – – → Existing View Axis

Construction Phase 4

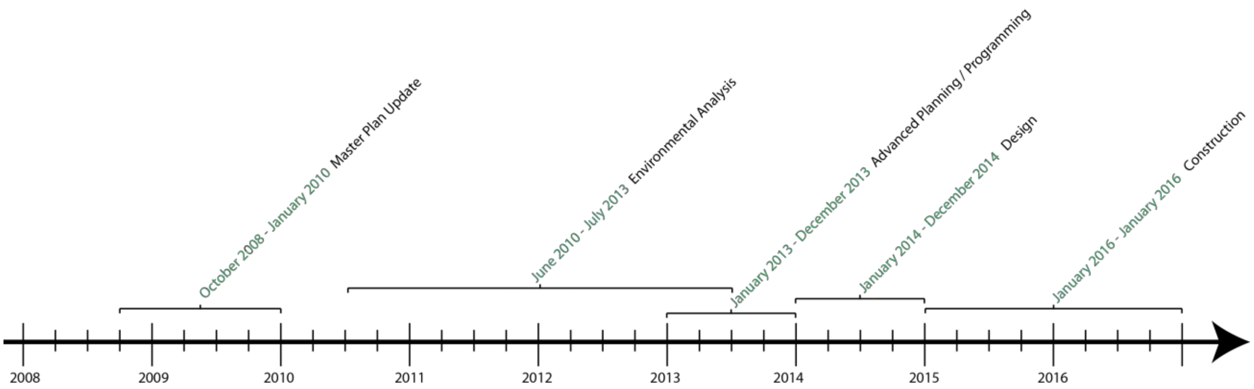
Figure 7-4

Palm Springs International Airport
Master Plan

7.6 TIMELINE

The following timeline for the four primary steps of the implementation process assumes that the process is initiated immediately following conclusion of the Master Plan adoption by City Council in 2012 and that there are no delays encountered throughout the process. It should be noted that there is no requirement that these steps be completed in immediate succession though delays will naturally result in an increase in the duration of the implementation process. The timeline is shown in **Figure 7-5**.

Figure 7-5: Implementation Plan Timeline



7.7 CONCLUSION

Implementation of the Immediate Action Plan will require four primary components that will follow the Master Plan:

1. Environmental Analysis
2. Advanced Planning
3. Design
4. Construction

These implementation components can begin following the master plan and will allow for the proper vetting and detailed analysis required prior to construction of the recommended alternative. The current economic recession has led to a reduction in materials and labor costs. This makes the current market an attractive time to implement needed improvements if they can be financed. The current market also presents some degree of uncertainty about growth though forecasting is always uncertain, even during the most robust periods of economic growth. The PSP Master Plan provides the initial justification for moving forward with the Immediate Action Plan primarily because it will help resolve existing facility deficiencies and allow PSP to maintain a higher level of passenger convenience and comfort for the next decade and beyond. Ultimately, however, it will be the City of Palm Springs and other unforeseen factors that will determine the timing and phasing of this plan.

Chapter 8: Addendum to Master Plan Update

8.1 INTRODUCTION

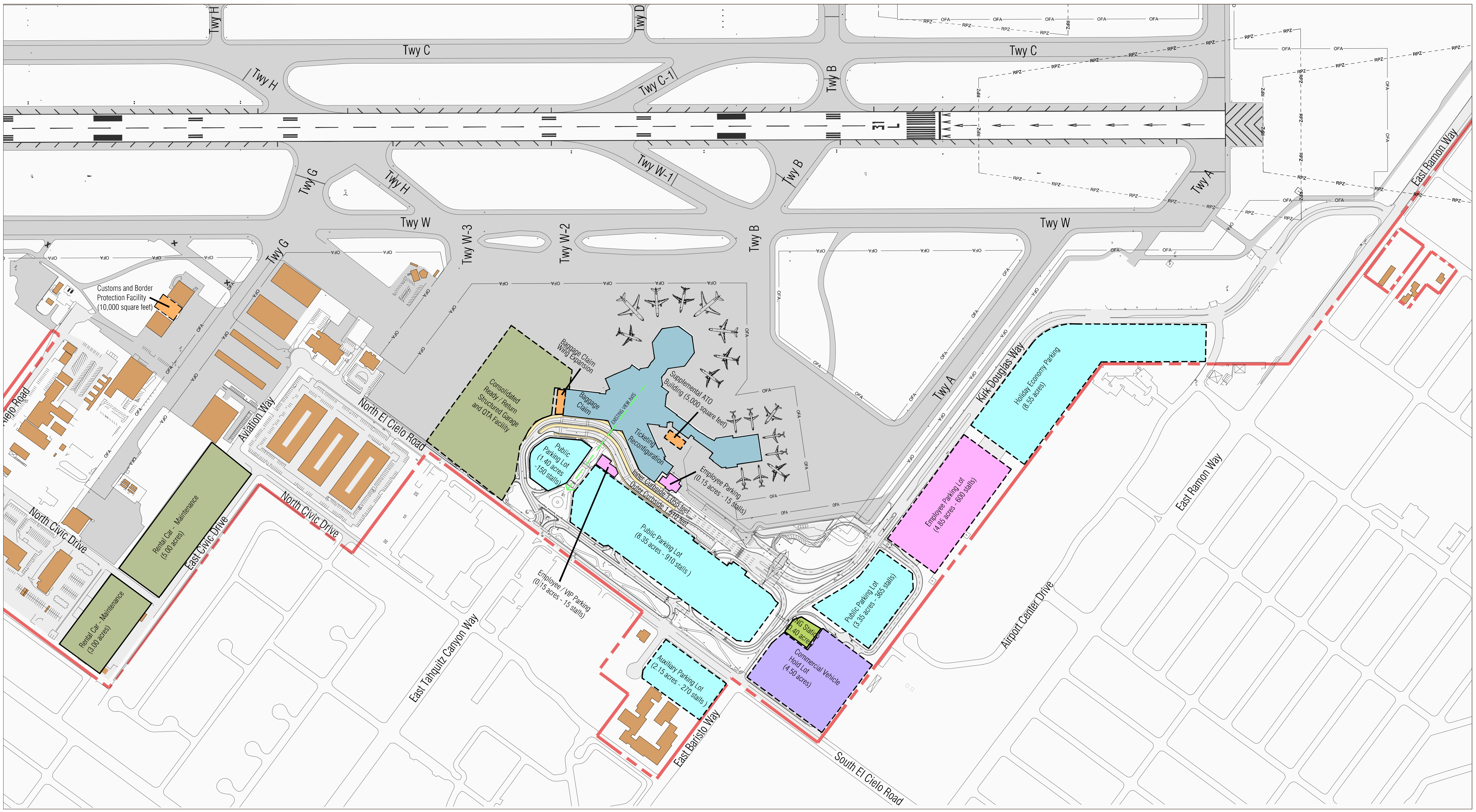
At the conclusion of the draft Master Plan Update, PSP submitted to the FAA for review and approval the Airport Layout Plan (ALP), which was reflective of the Recommended Alternative. Following FAA approval, PSP began the environmental review (National Environmental Policy Act [NEPA] and California Environmental Quality Act [CEQA]) processes. During environmental review, changing economic conditions and the public comment/review process led to revisions of various aspects of the near-term Recommended Alternative. As a result, this Master Plan Update addendum chapter summarizes the environmental and public review process, presents and compares two new alternatives addressing the terminal and landside facilities, and identifies the updated Recommended Alternative.

The revised Recommended Alternative is being carried forward through the environmental review process. The revised Alternative is a comprehensive near-term plan for PSP, intended to focus specifically on improvements anticipated to be needed by 2018, based on forecast enplanements. As outlined in this chapter, the revised Recommended Alternative, as shown in **Figure 8-1**, reflects the following:

- Airside facilities – No changes to the existing runway and taxiway system and the continued use of declared distances to meet FAA requirements for Runway Safety Area (RSA) compliance, despite the currently approved ALP depicting a shortening of Runway 13R-31L to meet RSA standards, which is no longer necessary.
- Terminal facilities – Two additions to the terminal building are proposed – an extension of the baggage claim area and the construction of a supplemental building located behind the existing terminal to allow for an interior reconfiguration of ticketing space without modifying the historic west façade.
- Landside facilities – Reconfiguration of some parking areas and a consolidation of QTA operations in an expanded on-site location with rental car ready/return facilities located in a multi-level garage.
- General Aviation and Support facilities – no additional revisions or recommendations.

8.1-1 FAA Airport Layout Plan (ALP) Review and Finding

On January 10, 2011, the FAA conditionally approved the PSP ALP, which reflected the Immediate Action Plan (IAP) as identified in this Master Plan Update. FAA's conditional approval states that prior to unconditional approval or funding of projects proposed in the ALP, an FAA environmental review and determination is required. In its conditional approval, the FAA stated that some projects on the ALP would require an Environmental Assessment (EA), while other projects would only need a Categorical Exclusion provided no significant impacts result or no extraordinary circumstances exist (as outlined in FAA regulations). PSP began the environmental analysis required under both NEPA and CEQA, which resulted in additional planning and disclosure of potential environmental impacts.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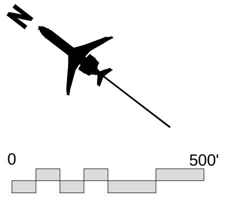
Twy C-1
Twy B
31 L
Twy G
Twy H
Twy W-1
Twy B
Twy A
Twy W
Twy W-3
Twy W-2
Twy B
Twy W
Twy G
East Ramon Way
Customs and Border Protection Facility (10,000 square feet)
Baggage Claim Wing Expansion
Consolidated Ready / Return Structured Garage and QTA Facility
Baggage Claim
EXISTING VIEW AXIS
Supplemental ATO Building (5,000 square feet)
Ticketing Reconfiguration
Public Parking Lot (1.40 acres -150 stalls)
Employee Parking (0.15 acres - 15 stalls)
Inner Curbside 1,055 feet
Outer Curbside 1,510 feet
Public Parking Lot (8.35 acres - 910 stalls)
Employee / VIP Parking (0.15 acres - 15 stalls)
Twy A
Kirk Douglas Way
Holiday Economy Parking (8.55 acres)
Employee Parking Lot (4.85 acres - 600 stalls)
East Ramon Way
Public Parking Lot (3.35 acres - 365 stalls)
CNG Station 0.40 acres
Commercial Vehicle Hold Lot (4.50 acres)
Airport Center Drive
Aviation Way
North El Cielo Road
North Civic Drive
North Civic Drive
East Civic Drive
Rental Car - Maintenance (5.00 acres)
Rental Car - Maintenance (3.00 acres)
East Tahquitz Canyon Way
Auxiliary Parking Lot (2.15 acres - 270 stalls)
East Baristo Way
South El Cielo Road
OFA
RPZ

Source: HNTB Analysis

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE



🟫	On-Airport Building	🟪	Existing Employee Parking	▭	Existing Curbside
🟦	Existing Terminal Building	▨	Potential Employee Parking	─·─	Airport Property Line
🟧	Potential On-Airport Building Development	▨	Potential Commercial Vehicle Hold Lot	─ ─ →	Existing View Axis
🟩	Existing Rental Car Facility	▨	Potential Reconfigured / New Public Parking	🟩	Existing CNG Station
▨	Potential Rental Car Facility	🟦	Existing Public Parking		

Recommended Alternative

Figure 8-1

Palm Springs International Airport
Master Plan

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8.1-4 Environmental Review Process Summary

Section 2.5 of this Master Plan Update provides an overview of the environmental setting of PSP. In accordance with NEPA, the proposed actions and their reasonable alternatives are subject to a more detailed environmental review. Further, because PSP is located in the State of California, this Master Plan Update is also subject to an environmental analysis under the California Environmental Quality Act (CEQA). CEQA is a California statute that requires the City of Palm Springs to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

NEPA requires environmental review of Federal actions; the City of Palm Springs is proposing improvements at PSP that would be eligible for Federal funding, which is considered a Federal action. The NEPA analysis addresses the potential impacts of the proposed projects on environmental resource categories as required by Federal laws and regulations, and was prepared pursuant to the requirements and standards of the Council on Environmental Quality (CEQ) regulations (40 CFR Part 1500). The NEPA analysis follows guidance set forth in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Following the Airport Commission approval of the Recommended Alternative for the Master Plan Update in 2011, the NEPA and CEQA analyses were started concurrently.

As part of the environmental review, the Aviation Activity Forecast, presented in **Chapter 3**, was reviewed to determine if the potential projects in the near term were still warranted. The City of Palm Springs compared the forecast with existing operation and passenger levels and the updated FAA Terminal Area Forecast (TAF), and found, in general, that enplanements continue to rise and differences in the number of overall operations can be generally attributed to a decrease in General Aviation operations (which are not the primary drivers to the improvements identified in the Master Plan Update). In January 2014, the FAA revalidated the Master Plan Aviation Activity Forecast for environmental planning purposes.

8.1-5 Public Involvement and Review

In 2014, the Master Plan Update was reviewed with the public and State, City, and Riverside County agencies. Presentations highlighted the Master Plan process, facility requirements, alternatives analysis, and the identification of a Recommended Alternative that would meet the near-term requirements for PSP. The Recommended Alternative (IAP) included addressing interior circulation spaces (in the baggage claim area and the ticketing wing) and landside alternatives (the location and capacity of the rental car facilities and nearby environmental concerns). Within the terminal, the IAP proposed an extension of the baggage claim area to the north and expanding the circulation space of the ticketing wing by relocating the western façade of the terminal towards the curb and restoring certain historic elements of the building to address its status as a locally-designated historic resource. To address landside needs, the IAP proposed expanding the rental car facility near its current location and consolidating ready/return and quick-turn around facilities, and relocating the maintenance areas to an area along Kirk Douglas Way. To address on-airport circulation, the IAP also recommended closing the Airport entrance at Baristo Road, which is regularly used by the public as a bypass route to access Ramon Road, to reduce forecast congestion along Kirk Douglas Way.

The IAP, along with two landside alternatives, were presented to the City of Palm Springs Airport Commission, the Historic Site Preservation Board, and the Planning Commission in 2014, prior to presentation to City Council. In addition, the CEQA document (Initial Study and Mitigated Negative Declaration) and NEPA document (Environmental Assessment) analyzing the IAP were initiated, and the CEQA document was circulated for public review. The public review of the study resulted in numerous concerns, most succinctly illustrated in feedback provided by the City Council:

- Opposition to the modification of the western façade of the ticketing area based on historic preservation relevancy.
- Support of maintaining the rental car facilities in the same location for ease of access by travelers (minimizing the distance between the terminal and rental car ready/return facilities).
- Opposition to relocating rental car maintenance facilities to a location along Kirk Douglas Way, due to the potential of increased traffic from rental car shuttling along El Cielo Road.
- Opposition to the closure of Baristo Road.

8.2 ALTERNATIVES TO THE IMMEDIATE ACTION PLAN

Collectively, the NEPA and CEQA processes, which included environmental discovery studies and stakeholder review, resulted in additional alternatives to the IAP in late 2014/early 2015. The revised alternatives, including the refinements and changes to the IAP are discussed in the following sections by functional category.

8.2-1 Airside Alternatives

The updated Recommended Alternative for the airside facilities results in a change to the proposed RSA improvements for Runway 13R-31L. The Master Plan considered improvements to the airside facilities, and concluded that the airfield has adequate capacity to serve forecast operations beyond 2028. **Section 4.2-3** introduces the RSAs at PSP and outlines how PSP currently meets FAA requirements for RSA dimensions. **Chapter 5** explored potential alternative methods for meeting RSA requirements. A standard RSA for an air-carrier runway such as Runway 13R-31L extends 1,000 feet past both runway ends and is 500 feet wide, centered on the runway centerline. Although the southerly portion of Runway 13R-31L's RSA is bisected 143 feet from its southern end by the airport property boundary at East Ramon Road, PSP employs the use of declared distances to provide the standard RSA dimensions. With the use of declared distances, the effective useable end of the runway is 143 feet shorter than the full paved length of the runway. Through the course of the NEPA analysis, the FAA concluded that the PSP meets the RSA requirements through the continued use of declared distances. As such, any potential changes to the runways in use at PSP were removed from the environmental analysis. The updated Recommended Alternative therefore does not change existing airside facilities.

8.2-2 Terminal Alternatives

Section 4.4 outlines the terminal facility requirements, while **Section 5.5** outlined a range of near- and long-term development options that were initially considered. Although the Master Plan Update was initiated with the intent of evaluating long-term alternatives, in consideration of the Great Recession the

Master Plan Update focused on the development of an alternative that met near-term facility needs without regard to the impact on the terminal façade, a designated local (Class 1) historic resource, identified as the IAP. The IAP provided a lower-cost alternative that would resolve some of the most pressing needs within PSP's terminal without precluding longer term development. **Section 5.5-5** provides a summary of the refined terminal alternative included in the IAP.

The expansion of the baggage claim area remains part of the Recommended Alternative. However, because the terminal is designated as a local (Class 1) historic resource, it is afforded additional consideration under CEQA. Potential changes to the façade of the terminal were viewed unfavorably and the City Council ultimately decided to evaluate additional alternatives to meet interior ticketing passenger circulation while preserving the existing terminal façade. Two alternatives for modifications to the terminal building were evaluated – the Interior Terminal Reconfiguration Alternative and the East Terminal Expansion Alternative.

Interior Terminal Reconfiguration Alternative

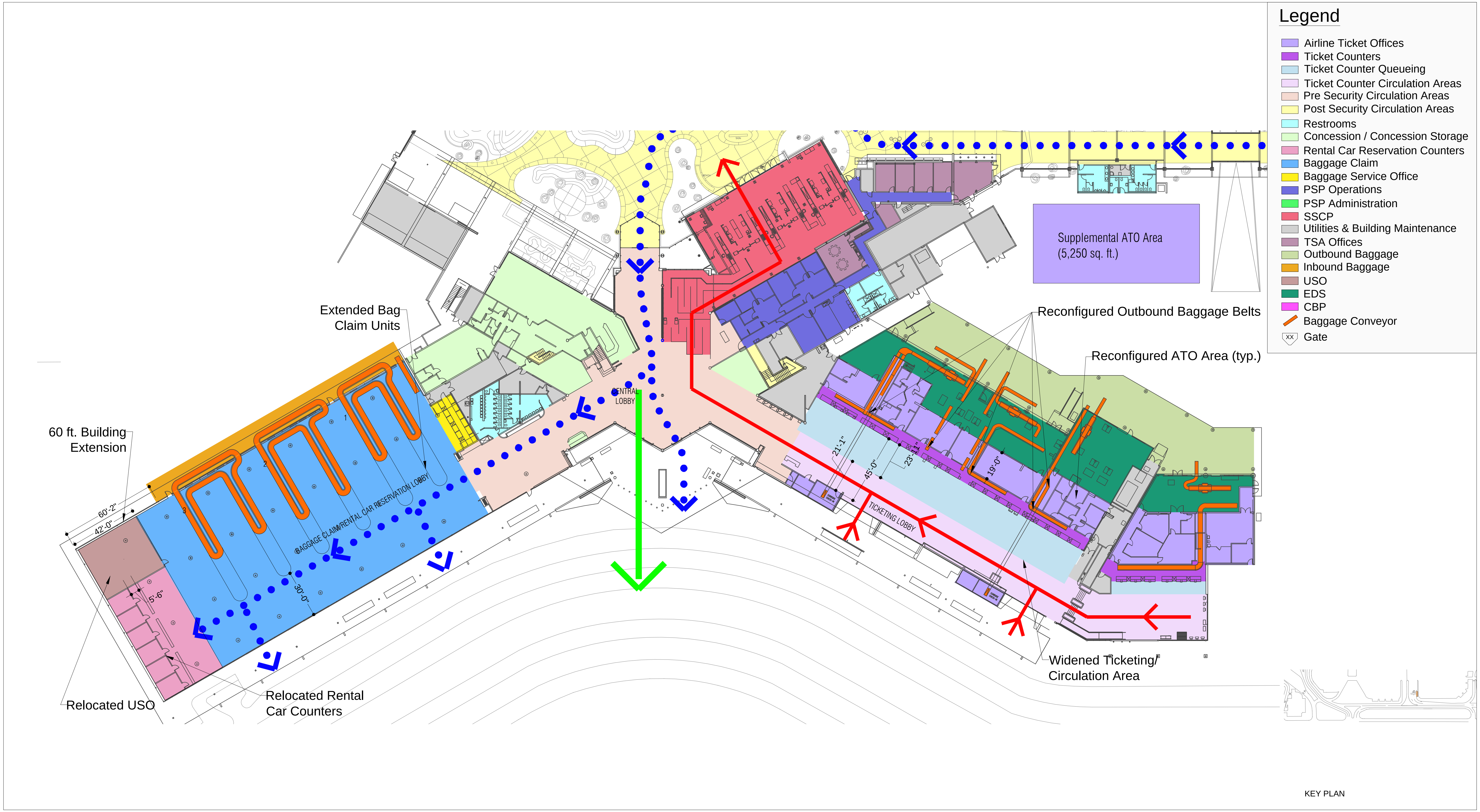
Figure 8-2 presents the Interior Terminal Reconfiguration Alternative, which would reconfigure interior space by pushing back (to the east) the ticket counters and reducing Airline Ticket Office (ATO) space inside the terminal. It would modify the terminal footprint by constructing a separate small adjacent building to accommodate displaced ATO functions, as needed, behind the terminal and expand the terminal to the north to accommodate an expansion to baggage claim devices.

ATOs traditionally include space to support the day-to-day specific administrative and customer service functions. The ATOs are located behind the lobby enclosure wall and are not accessible to the general public, and currently encompass 12,846 square feet. The reconfiguration of ATO space would not impact the historic western façade of the terminal, although it would require addressing the "back of house" functions associated with outbound baggage and screening.

In order to provide additional queuing space in the ticketing circulation area, the overall size of the ATOs inside the terminal would be reduced from 12,846 square feet to approximately 7,620 square feet. The ticketing circulation area width would increase from 29 feet to 45 feet to enhance both passenger queuing and circulation areas. To maintain ATO functional space, an approximately 5,250 square foot building would be constructed outside and to the east of the existing terminal building to house certain replacement ATO functions, such as storage of supplies, break rooms, and other functions that do not require close proximity to the ticketing counters. This project also has the potential to create some additional square footage of leasable floor space for the TSA screening functions.

East Terminal Expansion Alternative

The East Terminal Expansion Alternative, depicted on **Figure 8-3**, would expand the footprint of the ticketing wing to the east by approximately 25 feet, resulting in an additional 3,150 square feet of space. All functional components of the ticketing wing would need to be modified to allow additional ticketing circulation space and maintain existing ATO leasable space.


Legend
Airline Ticket Offices
Ticket Counters
Ticket Counter Queueing
Ticket Counter Circulation Areas
Pre Security Circulation Areas
Post Security Circulation Areas
Restrooms
Concession / Concession Storage
Rental Car Reservation Counters
Baggage Claim
Baggage Service Office
PSP Operations
PSP Administration
SSCP
Utilities & Building Maintenance
TSA Offices
Outbound Baggage
Inbound Baggage
USO
EDS
CBP
Baggage Conveyor
XX Gate
Supplemental ATO Area (5,250 sq. ft.)
Reconfigured Outbound Baggage Belts
Reconfigured ATO Area (typ.)
Extended Bag Claim Units
60 ft. Building Extension
60'-2"
42'-0"
5'-6"
30'-0"
BAGGAGE CLAIM/RENTAL CAR RESERVATION LOBBY
CENTRAL LOBBY
TICKETING LOBBY
21'-1"
45'-0"
23'-11"
19'-0"
Relocated USO
Relocated Rental Car Counters
Widened Ticketing/ Circulation Area
KEY PLAN

Interior Terminal Reconfiguration Alternative

Figure 8-2

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT

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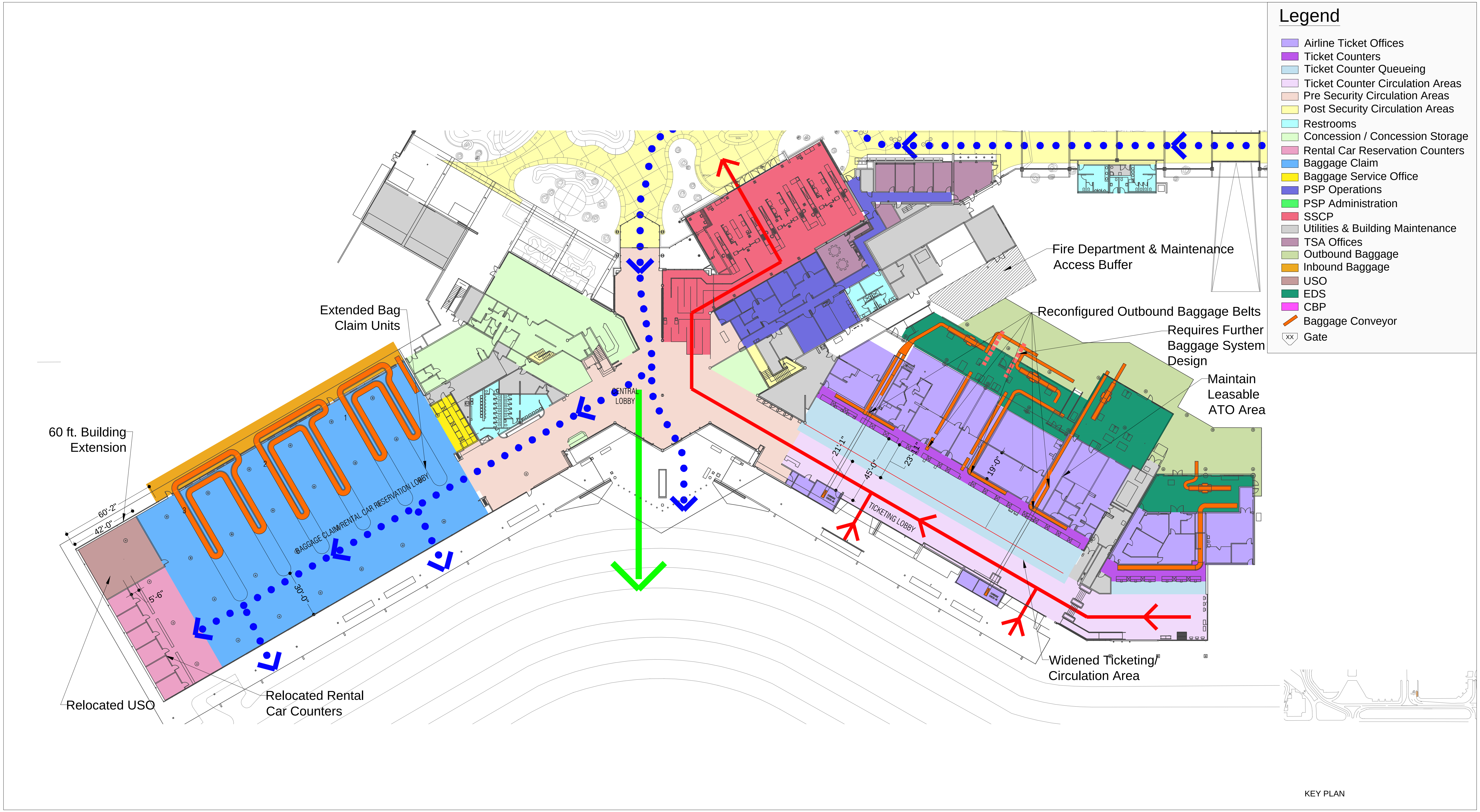

Legend
🟪 Airline Ticket Offices
🟪 Ticket Counters
🟦 Ticket Counter Queueing
🟪 Ticket Counter Circulation Areas
🟧 Pre Security Circulation Areas
🟨 Post Security Circulation Areas
🟦 Restrooms
🟩 Concession / Concession Storage
🟪 Rental Car Reservation Counters
🟦 Baggage Claim
🟨 Baggage Service Office
🟦 PSP Operations
🟩 PSP Administration
🟥 SSCP
⬜ Utilities & Building Maintenance
🟪 TSA Offices
🟩 Outbound Baggage
🟧 Inbound Baggage
🟫 USO
🟩 EDS
🟪 CBP
Baggage Conveyor
XX Gate
Fire Department & Maintenance Access Buffer
Reconfigured Outbound Baggage Belts
Requires Further Baggage System Design
Maintain Leasable ATO Area
Extended Bag Claim Units
60 ft. Building Extension
Relocated USO
Relocated Rental Car Counters
Widened Ticketing/ Circulation Area
CENTRAL LOBBY
BAGGAGE CLAIM/RENTAL CAR RESERVATION LOBBY
TICKETING LOBBY
60'-2"
42'-0"
5'-6"
30'-0"
21'-1"
45'-0"
23'-11"
19'-0"
KEY PLAN

East Terminal Expansion Alternative

Figure 8-3

Palm Springs International Airport
Master Plan

PALM SPRINGS INTERNATIONAL AIRPORT

N

0 60'

There is limited area outside of and behind the terminal in which an expansion could be constructed without impacting airside operations, and this alternative potentially poses the need to close one aircraft boarding gate. Additionally, previous expansions to the ticketing wing complicate additional expansion. This alternative includes an expansion in between the eastern-most point of the ticketing wing and the fence that separates the pedestrian walkway between the terminal and Regional Concourse. This area is currently used to load baggage carts once checked baggage has passed through the EDS system. Tugs with baggage carts traverse between this area and aircraft by way of a below-grade ramp that runs below the terminal walkway. The available space is further limited by restrictions due to fire department and maintenance access.

The most complex element associated with this alternative is the reconfiguration and relocation of the baggage screening area. The existing outbound baggage and EDS area is inefficiently organized and undersized. Ideally, PSP would be able to upgrade the existing outbound baggage screening and EDS system to a full in-line system where no manual baggage loading is required; a conveyor would directly link the ticket counters to the CTX machines. A full in-line system could include the use of vehicle baggage drop systems. In general, a full in-line baggage system would require a larger amount of space beyond the current terminal footprint and is unlikely to be compatible with this alternative. Since the introduction of baggage screening following 9/11, the outbound baggage make-up area has lost a considerable amount of floor area. However, the airlines have continued to successfully manage their conveyor-to-tug bag handling operations in a more confined space.

To implement this alternative, the rear east wall would be relocated. As this back wall is moved, space becomes more constrained due to the terminal wing that tapers inwards (due to a previous building expansion). Additionally, this wing contains the emergency generator, a fuel tank, cooling towers and other mechanical, electrical and plumbing components. The generator and cooling tower require accessibility for heavy maintenance vehicles in case machinery needs to be replaced and fueled. Also the generator requires easy fire department access. Currently this space is constrained to meet the applicable safety requirements that would be needed for this expansion. Two studies, completed by PSP over the last ten years, analyzed a full in-line baggage system and validated the constrained areas and resulting infeasibility due to the system's high costs for procurement and maintenance.

8.2-3 Landside Alternatives

The rental car facilities at PSP are currently configured in a manner that creates inefficient operations for the rental car providers and suppliers by segregating ready/return from the QTA and maintenance areas, as described in **Section 4.5**. While convenient for rental car customers, the arrangement of facilities creates compatibility issues with nearby residential areas as rental car maintenance and service facilities are located off-site from the ready/return lots (although still on Airport property). To adjust for the distance between facilities, the rental car providers must employ staff to drive returned vehicles to the QTA facility and return serviced vehicles to the ready lot. The shuttling of rental cars between the facilities creates operational inefficiencies for the rental car providers. Additionally, there is inadequate space to store the queue of serviced rental cars that cannot fit into the allotted ready spaces during the peak season. The split operation also requires fuel tankers to deliver fuel to the QTA facilities to unload gasoline for the rental car providers in an area immediately adjacent to a residential area.

To increase the productivity of the rental car operation at PSP, the Master Plan Update recommended consolidation and expansion of facilities to meet demand and enhance operational efficiency. Inefficient rental car facilities defined the need for a designated QTA facility / service area that would be located adjacent to the ready/return facility and provide interconnectedness between the two areas for improved rental car operations. The IAP and two derivatives addressed landside requirements primarily by combining the QTA and ready/return facilities in different locations on the Airport. The alternatives were the subject of environmental review, including potential impacts on traffic circulation, the location of existing hazardous materials and impacts on land use, among others.

To address the rental car providers' and the public's concerns to minimize the movement of rental cars between maintenance and ready/return locations, and to keep the Airport entrance at Baristo Road open, two alternatives that combined rental car facilities were identified. Common to both is keeping the Airport entrance at Baristo Road open to the public.

Consolidated Rental Car Ready/Return and QTA Alternative

This alternative evaluates a consolidation of the rental car ready/return and QTA facilities in the general area north of Baggage Claim (expanded in its current location). Maintenance facilities would remain in their current location along North Civic Drive. **Figure 8-4** presents this alternative.

The existing rental car ready/return location is a surface lot that could be expanded. The location is surrounded by the terminal, airside, the U.S. Customs and Border Protection (CBP) facility, and a small parking area. The rental car facilities in this location could be expanded with the demolition of an old hangar building and the relocation of the CBP facility (which must maintain access to the airside). The total two-dimensional area available for rental car facilities is approximately 340,000 square feet, or 7.8 acres. The available envelope excludes the expanded Baggage Claim wing, but includes additional airside space once the vacant hangar is demolished.

By 2028, PSP is anticipated to need 509 ready stalls and 357 return stalls, for a total of 866 stalls, requiring 223,090 square feet or 5.1 acres. Additionally, the Master Plan Update identified that QTA operations would require 5.8 acres by 2028, although a consolidated facility may reduce this amount somewhat as a result of shared efficiencies. The total required acreage is approximately 11 acres, or approximately 478,289 square feet, which exceeds the available surface space of 340,000 square feet by approximately 138,289 square feet.

In order to accommodate rental car ready/return and QTA facilities, a multi-level parking garage would be constructed to accommodate ready/return stalls and ground-based QTA operations. It is generally more expensive to incorporate washing and fueling operations within the structured parking garage, although it would be feasible that a second or third level of a parking garage could overhang the first level of QTA operations. For example, rental car QTA operations at Nashville International Airport encompass approximately 165,000 square feet (3.8 acres), and include structured parking above. At PSP, the location of QTA facilities could be placed either towards El Cielo Road (with adequate visual screening) or closer to the airside (with an adequate buffer to protect airside operations). Rental car operators would still need to shuttle cars between maintenance and the ready/return area, but at a much reduced rate, as the majority of vehicles would only use the QTA facilities.

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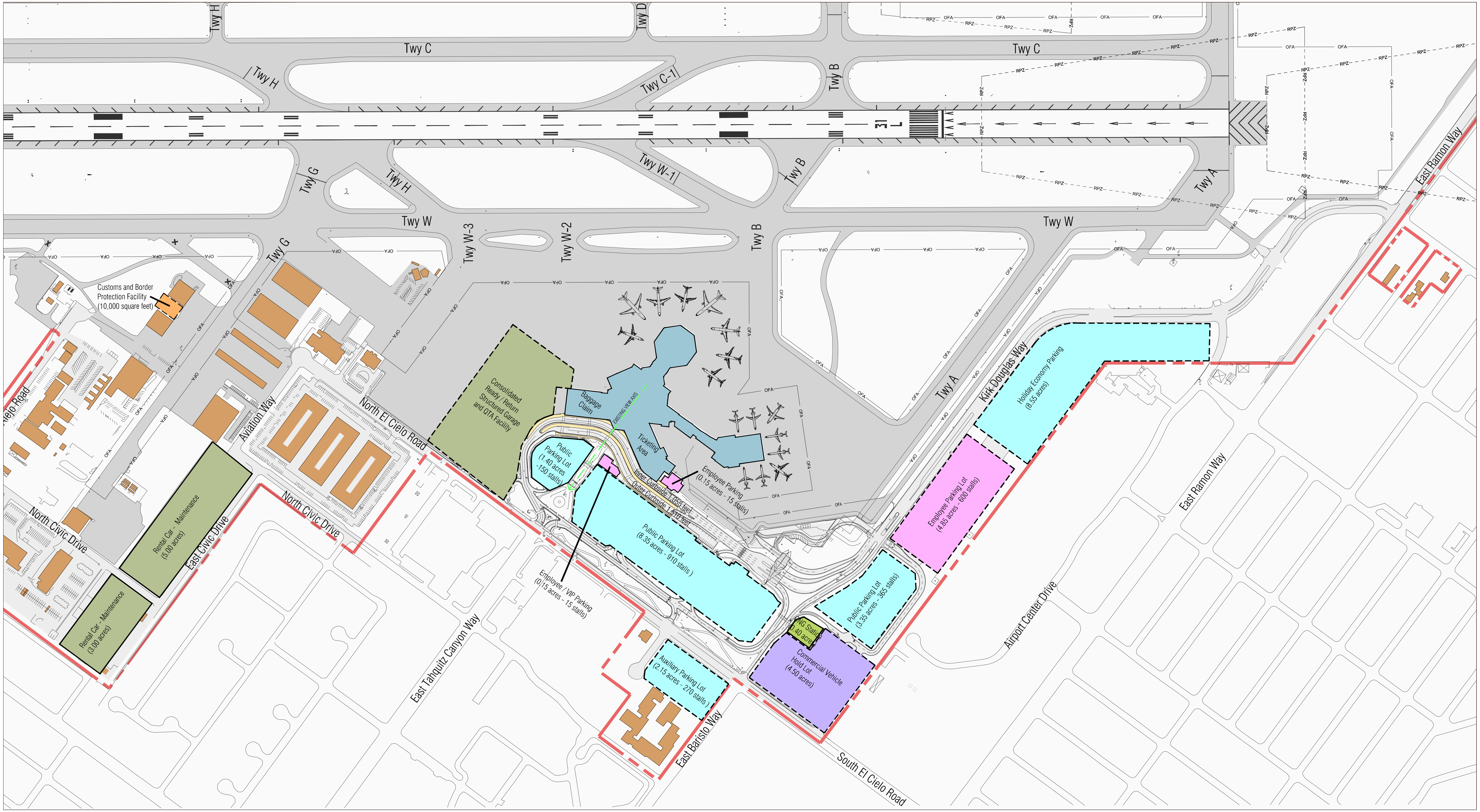
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Twy D
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Twy C-1
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Twy G
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Twy W-1
Twy B
Twy A
Twy W
Twy W-3
Twy W-2
Twy B
Twy W
Twy G
East Ramon Way
Customs and Border Protection Facility (10,000 square feet)
Consolidated Ready / Return Structured Garage and QTA Facility
Baggage Claim
EXISTING VIEW AXIS
Ticketing Area
Public Parking Lot (1.40 acres -150 stalls)
Employee Parking (0.15 acres - 15 stalls)
Inner Curbside 1,055 feet
Outer Curbside 1,510 feet
Public Parking Lot (8.35 acres - 910 stalls)
Employee / VIP Parking (0.15 acres - 15 stalls)
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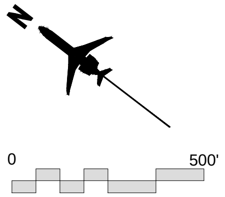
Public Parking Lot (3.35 acres - 365 stalls)
CNG Station 0.40 acres
Commercial Vehicle Hold Lot (4.50 acres)
Auxiliary Parking Lot (2.15 acres - 270 stalls)
East Ramon Way
Airport Center Drive
South El Cielo Road
East Baristo Way
East Tahquitz Canyon Way
North El Cielo Road
Aviation Way
North Civic Drive
North Civic Drive
East Civic Drive
Rental Car - Maintenance (5.00 acres)
Rental Car - Maintenance (3.00 acres)
El Cielo Road
OFA
RPZ

Source: HNTB Analysis



- 🟫 On-Airport Building
- 🟦 Existing Terminal Building
- 🟧 Potential On-Airport Building Development
- 🟩 Existing Rental Car Facility
- ▨ Potential Rental Car Facility
- 🟪 Existing Employee Parking
- ▨ Potential Employee Parking
- ▨ Potential Commercial Vehicle Hold Lot
- ▨ Potential Reconfigured / New Public Parking
- 🟦 Existing Public Parking
- 🟨 Existing Curbside
- ━ Airport Property Line
- ➜ Existing View Axis
- 🟩 Existing CNG Station

PALM SPRINGS INTERNATIONAL AIRPORT
MASTER PLAN UPDATE

Landside Alternative

Figure 8-4

Palm Springs International Airport
Master Plan

Consolidated Rental Car Ready/Return, QTA and Maintenance Alternative

This alternative evaluates a full consolidation of all rental car facilities (ready/return, QTA, and maintenance and storage facilities) in the general area north of the Baggage Claim wing. This would serve as a full ConRAC that would consolidate all airport-related rental operations and facilities into one integrated facility. A ConRAC would incorporate structured parking, integrated, shared QTA facilities and maintenance bays for each of the rental car providers at PSP.

Based on facility needs identified in the Master Plan Update, total requirements for rental car facilities in 2028 include approximately 20 acres, which would exceed the total area available in the potential development envelope by 12.2 acres. A consolidated QTA and maintenance facility would likely occupy most or all of the entire surface level of the potential development envelope. Further complexities exist when considering that maintenance facilities require higher-than-normal ceiling heights, under vehicle access, and vehicle lifts. These complexities would add additional cost to the implementation of this alternative and require vertical facility expansion likely beyond what is feasible at this location.

8.2-4 General Aviation and Support Facility Requirements

General Aviation and support facilities are described in **Sections 4.6** and **4.7** respectively. The IAP did not identify deficiencies in these areas, and as such, there are no revisions to the Recommended Alterative.

8.3 EVALUATION AND IDENTIFICATION OF THE RECOMMENDED ALTERNATIVE

This section documents the evaluation of the terminal and landside alternatives and identifies the revised Master Plan Update Recommended Alternative. For airside facilities, no changes are proposed. Terminal alternatives include the Interior Terminal Reconfiguration and East Terminal Expansion alternatives. Landside alternatives include a consolidated rental car ready/return, QTA alternative and a second alternative that would also consolidate all maintenance facilities with the relocated ready/return and QTA facilities. General Aviation and support facilities do not include changes to the existing layout. The key objectives used in the selection of the revised alternatives include the need to:

- Address near-term terminal and near- and long-term landside deficiencies
- Maintain the historic western façade of PSP's terminal while providing sufficient queuing and public circulation areas
- Maintain and improve the existing location of rental car facilities
- Maintain access to and through the Airport via Baristo Road and Kirk Douglas Way

8.3-1 Comparison of Terminal Alternatives

Both terminal alternatives (ticketing and baggage claim areas) would meet many near-term needs by modifying the non-historic elements of the terminal building: to allow for additional passenger circulation (circulation area width would increase from 29 feet to 45 feet) in the ticketing wing while maintaining the existing historic western façade; to allow the existing baggage claim devices to be extended to provide an additional 450 linear feet of frontage (by constructing a 60 foot terminal addition to the north), and to allow for the relocation of the USO within the terminal.

In addition to constructing a small separate building adjacent to the terminal ticketing wing, the Interior Terminal Reconfiguration Alternative would require some modification to the existing baggage conveyance system, however, it would not require the relocation of the EDS system further to the east. Expanding the building footprint, as shown in the East Terminal Expansion results in a more technically complex process. It would require a complete reconfiguration of the "back of house" functions associated with outbound baggage and screening, would further constrain the outbound baggage feeds without implementation of a full in-line system, and it would not adequately resolve the need to improve the existing outbound baggage screening process. The East Terminal Expansion would be more expensive compared to the Interior Terminal Reconfiguration Alternative as it requires extensive reconfiguration of baggage handling and expansion of the terminal. It would also require a complex construction phasing plan that would likely impact the existing level of service. The building expansion would also further constrain the airside.

Based on these factors, the Interior Terminal Reconfiguration Alternative is recommended as it is a lower-cost and less complex solution while meeting PSP's needs for increased circulation and queuing areas. Any structural modifications to the terminal building (either the baggage claim wing or the ticketing wing) would require additional detailed analysis of the existing structure to validate the structural feasibility of a potential ticketing expansion (related to modern seismic requirements and the structure's history of previous expansions).

8.3-2 Comparison of Landside Alternatives

The Master Plan Update identified a location in the vicinity of the existing rental car ready/return lot that, combined with the demolition of the vacant hangar and small parking lot, encompasses approximately 7.8 acres. Based on the existing size of combined rental car activities at PSP, the site, even with construction of a parking structure, does not provide sufficient space to incorporate ready/return facilities, QTA facilities, and maintenance facilities. A consolidated QTA and maintenance facility would likely occupy most or all of the entire surface level of the potential development envelope. For example, the consolidated QTA and maintenance facility in Spokane encompasses over 380,000 square feet (over 8.7 acres), and a recently constructed QTA and maintenance facility at Fresno Yosemite International Airport encompasses approximately 280,000 square feet (6.4 acres). Neither of those examples include integrated ready/return parking in a structured garage.

While a relocation of maintenance facilities could open up land for potential redevelopment, the technical challenges associated with a full ConRAC on a small site would result in higher costs. For example, integrating washing and fueling services into a structured garage requires addressing the typical sizing of maintenance bays for rental car facilities, which are sized considerably larger than a typical parking garage and may necessitate underground bays to access vehicle engines.

Because insufficient space exists in the location of the existing ready/return area, the Recommended Alternative is the consolidation of only the QTA operations and rental car ready/return facilities in a multi-level garage and maintaining the current location of heavy vehicle maintenance facilities.

8.3-3 Recommended Alternative

The components that comprise the Recommended Alternative are presented in **Table 8.1**.

Table 8-1: Components of the Recommended Alternative

Functional Category	Project
Airside	No changes to existing facilities (Maintain declared distances for Runway 13R-31L)
Terminal	Expand terminal building by 60' to the north; accommodate rental car counters and USO to allow for baggage claim device expansion.
	Reconfigure interior of ticketing wing; reduce Airline Ticket Office (ATO) space to allow for circulation area expansion.
	Construct a supplemental 5,000+ sq. foot building behind the terminal to accommodate displaced ATO functions.
Landside	Reconfigure the existing Ready/Return car rental lot to accommodate a Quick Turn Around (QTA) facility and structured parking for ready/return functions.
	Reconfigure and expand public and employee parking areas along Kirk Douglas Way; maintain Baristo airport entrance.
General Aviation/Support	No changes to existing facilities

Source: HNTB Analysis

8.4 IMPLEMENTATION

The revised Recommended Alternative, and the Master Plan Update in general, provides a broad framework for airport improvements; it is not intended as a sufficiently detailed analysis to support the implementation of a project. There are four primary components to the implementation of the Recommended Alternative: Environmental Analysis; Advanced Planning / Programming; Design; and Construction. Implementation of the projects identified in the Recommended Alternative may be subject to factors including funding constraints, project sequencing limitations, environmental processing requirements, tenant coordination, leasing or property acquisition issues, and the City's preferences. The City of Palm Springs may implement individual elements of the Recommended Alternative using a staggered approach to address the most pressing needs earliest, or a concurrent approach to address constraints ahead of parking.

Projects will be included in the Airport's Capital Improvement Plan (except for non-FAA eligible projects such as car rental improvements), which include all programmed airport improvement projects over a five-year timeframe. For the five-year program beginning in 2016, PSP has programmed a phased terminal building capacity improvement program in 2017 and 2018. It is anticipated that PSP will incorporate other projects identified in this Master Plan Update into future updates to the ACIP. Funding may be available through the FAA for select eligible projects identified in the Recommended Alternative. PSP must fund the remaining project cost, using a combination of the funding sources through use of

Passenger Facility Charges, Customer Facility Charges, or airport operating revenues (such as airlines rates and charges). **Section 6.4** provides additional details regarding funding sources and financial feasibility.

The following sections provide a brief overview of these next steps.

8.4-1 Environmental Review

The Recommended Alternative in the Master Plan Update is subject to review under both NEPA and CEQA. Because there are no changes to the airfield, or elements of the project that are anticipated to result in significant impacts under applicable FAA guidance, PSP is preparing a Categorical Exclusion to document and disclose the environmental consequences of the proposed action. The Categorical Exclusion is anticipated to be complete in 2015, and once complete, allows the City to apply for federal funding to implement the projects.

The City of Palm Springs, as the lead agency, completed and distributed an Initial Study and Mitigated Negative Declaration under CEQA that reflected the projects included in the IAP in March 2014. Following the revisions to the Recommended Alternative, the City undertook a revision to the Initial Study and Mitigated Negative Declaration, which presents the updated Recommended Alternative and notes any differences in findings of the various environmental categories with those of the previously circulated documents. The revision will be signed and adopted by the City of Palm Springs upon City Council approval of the Master Plan.

8.4-2 Advanced Planning/Programming

As shown in the figures presenting the Recommended Alternative, the Master Plan Update presents a broad guide for the scale and location of proposed improvements. Following the completion of this study, specific project components will undergo advanced planning, which will consider programmatic criteria established for the proposed improvements. For example, advanced planning for the construction of a parking structure to accommodate rental car QTA and ready/return operations would identify the site layout, utilities, number of parking spaces and circulation. It is during this phase that airport tenants, such as the rental car operators and airlines, should have active involvement in the refinements of the projects that may affect their operating environment and costs.

8.4-3 Design

Following the advanced planning, the design phase involves the identification of engineers and architects to prepare certified design drawings and specifications.

8.4-4 Construction

Like the IAP, the Recommended Alternative is comprised of two primary components: the rental car facilities and terminal improvements. Construction of these facilities needs to be coordinated so that existing facilities can remain operational during construction to the extent feasible. In general, most projects included in the Recommended Alternative can be constructed with minimal disruption to the existing level of service at the Airport. The following factors should be considered for each development project:

Expand terminal building by approximately 60' to the north to accommodate rental car counters and USO to allow for baggage claim device expansion. Construction would begin on the expansion of the terminal building. Once complete, the USO relocation and the relocation of the rental car counters could occur. The baggage claim linear frontage extensions would occur as the final step.

Construct a supplemental 5,000+ sq. foot (approximate) building behind the terminal to accommodate displaced ATO functions. There are minimal enabling projects that would need to occur prior to construction. However, construction activities associated with this building may infringe upon the efficient use of the outbound baggage process.

Reconfigure interior of ticketing wing; reduce Airline Ticket Office (ATO) space to allow for public circulation area expansion. The reconfiguration of interior terminal circulation in the ticketing wing cannot begin without the construction of the supplemental ATO building. Once complete, the existing ticketing wing can be modified provided the structural integrity of the building is ensured. The construction will need to be carefully phased to ensure sufficient space for ticketing activities is maintained, and the outbound baggage handling process will likely be less efficient until project completion.

Reconfigure the existing Ready/Return lot to accommodate an integrated QTA and ready/return facility. Demolition of the unused hangar and relocation of the CBP facility would need to occur as an enabling project. The existing ready/return lot would be required to be relocated prior to construction of a structured parking garage. Rental car customers will likely be required to take a shuttle bus to a temporary location to drop off or pick up rental cars during construction.

Reconfigure and expand parking areas along Kirk Douglas Way. Each of these projects addresses existing surface parking along Kirk Douglas Way. Because additional parking is provided for peak-season use, suitable parking should exist to allow for the closure and resurfacing of each lot with minimal disruption, provided these construction activities occur during off-peak seasons.

8.4-5 Timeline

The aggressive timeline (shown in **Figure 8-5**) for the four primary steps of the implementation process assumes that the process is initiated immediately following conclusion of the Master Plan Update adoption by City Council in 2015 and that there are no delays encountered throughout the process. It should be noted that there is no requirement that these steps be completed in immediate succession, and this timeline assumes that some elements from the terminal reconfiguration are occurring simultaneously with car rental projects. Delays will naturally result in an increase in the duration of the implementation process. Further, the City may initiate advanced planning and design phases for individual projects on an as-needed basis.

Figure 8-5: Timeline